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ABSTRACT

This last of a three-volume report of a study done to assess the feasibility of large-scale, countercyclical public job creation covers the findings regarding the priorities among projects, indirect employment effects, skill imbalances, and administrative issues; and summarizes the overall findings, conclusions, and recommendations. (Volume 1, comprised of the report's first chapter, overviews and summarizes the entire study. The second volume, containing the second chapter, covers the methods and the findings with respect to activities, their job-creation potential, and related characteristics.) The content covers the last six chapters in the report. Chapter 3 on establishing priorities among activity areas covers unmet needs, program choices, and a multidimensional approach to program priorities. Focus of the fourth chapter is on estimating the overall employment effect of public service employment programs, including an overview of the model (estimating offsite employment changes and accounting for the effects of fiscal substitution) and a defining of activity clusters. Chapter 5 discusses the methods and findings regarding the supply of skills available for newly created public jobs, while the sixth chapter assesses the potential for skill imbalances. Chapter 7 discusses seven administrative and operational issues in implementing public job-creation programs. The final chapter summarizes the overall findings, conclusions, and policy recommendations. (EM)

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ASSESSING THE FEASIBILITY OF LARGE-SCALE COUNTERCYCLICAL PUBLIC JOB-CREATION

FINAL REPORT, VOLUME III
SELECTED IMPLICATIONS OF PUBLIC JOB-CREATION

SUBMITTED BY: THE URBAN INSTITUTE

TO: THE DEPARTMENT OF LABOR
UNDER CONTRACT NO. 20-11-77-18

JUNE 27, 1978

Opinions and conclusions expressed in this report are those of the authors and do not necessarily reflect the views of The Urban Institute or the Department of Labor.

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Preface

The work described in this report, undertaken under the terms of Contract Number 20-11-77-18, was a joint research effort by The Urban Institute and the American Institutes for Research. Although the primary responsibility for preparing this report fell, under the contractual terms, to The Urban Institute, the contribution of American Institutes for Research staff was important enough to merit joint-authorship.

More specifically, Herbert Rubenstein of the American Institutes for Research was responsible for the work summarized in Chapters II and VII; Harold Sheppard of the American Institutes for Research supervised the work of Rubenstein and had primary responsibility for the work summarized in Chapter III; Melvin Jones of The Urban Institute was responsible for the work in Chapter IV; Charles O. Thorpe, Jr. of The Urban Institute was responsible for the work in Chapter V; and Chapter VI was prepared by Alan Fechter of The Urban Institute. As Project Manager, Fechter also was responsible for the overall coordination of the effort and for the quality of the final report.

The size of this report required a rather unique method of packaging. The eight chapters of the report are organized into three volumes. Volume I contains Chapter I, an overview and summary of the entire report. Volume II contains Chapter II, a long chapter which describes methods and detailed findings with respect to activities, their job-creation potential and related characteristics. Volume III contains the remainder of the report, Chapters III through VIII, which describe our findings with respect to priorities among projects, indirect employment effects, skill imbalances, administrative and operational issues, and a concluding chapter, Chapter VIII, which summarizes overall findings, conclusions, and recommendations.

In addition to this report, the following series of papers have been developed as part of this project and could be made available to those who are interested in the more technical details of this study:

> Melvin Jones, "Direct and Indirect Employment Effects of Public Employment Programs: An Application of Input-Output Models to Assess Employment Effects by Skill," Working Paper 3619-3, Washington, D.C., The Urban Institute, 1978;
>
> Herbert Rubenstein, "Administrative and Operational Barriers to Public Job Creation: Evidence Based on Field Visits," Working Paper 3619-5, Washington, D.C., The Urban Institute, 1978b; and
>
> Charles O. Thorpe, Jr., "Target Groups to be Served by Public Job Creation Programs: Their Characteristics and Their Cyclical Sensitivity," Working Paper 3619-4, Washington, D.C., The Urban Institute, 1978.

These papers will be available through the National Technical Information Services as well as The Urban Institute. A large number of people have been instrumental in making this study possible. It is difficult to begin to acknowledge our indebtedness to the large number of public officials, employees, and representatives in the hundreds of public and private organizations and agencies we visited who cooperated with us and provided us with the information that was used in this study. Our failure to do so should in no way be construed as minimizing their valuable contributions; rather, it should be construed as our deference to pragmatic and logistic reasons in trying to keep the Preface within manageable proportion.

Particular debts of gratitude are due to Albert Mapou and Thomas Bruening of the Department of Labor, Employment and Training Administration, Office of Policy Evaluation and Research, for their continual guidance and support throughout the project and for their helpful comments on what must have seemed an endless flow of chapter revisions in the process of completing this report. The authors are also grateful for the constructive comments on early draft material in this report by William Barnes, National Commission for Manpower Policy; Lee

Bawden and Robert Harris of The Urban Institute; and Howard Rosen, Office of Policy Evaluation and Research. Assistance in the field efforts was provided by Tania Romashko, Larry Passarell, and Andrea Chasen, American Institutes for Research. Earl Wright, Upjohn Institute for Employment Research, provided useful advice on how to structure our field visits. Research assistance and copy editing were provided by Alice Wade, Urban Institute. Computer assistance was provided by Tito de la Garza and Roger Kohn, Urban Institute. Robert Haveman and Irwin Garfinkel, Institute for Research on Poverty, University of Wisconsin, were helpful in arranging for the use of the Golladay-Haveman simulation model. Michael Watts, Institute for Research on Poverty, worked closely with Melvin Jones in modifying the simulation model to suit our requirements and in producing outputs from this model. George Chow, Urban Institute, worked with Charles Thorpe in generating the estimates of target group populations in Chapter V. Penny Rosenwasser, Urban Institute, assisted in the preparation of the reference section.

Last, but by no means least, a special acknowledgment is due to Yuri Mayadas who typed the many drafts of each chapter of this report as we attempted to give a multiple-author product the appearance of consistency. It is fair to say that this report would not have been possible without her. Her tireless, patient, and conscientious efforts were truly above and beyond the call of duty.

Executive Summary

The purpose of this study was to assess the feasibility of large-scale, countercyclical public job-creation. A major concern was with the assertion that a public job-creation program is limited in its potential capacity to expand by the amount of meaningful activity. The central issue examined was: How many activities could be undertaken?

An additional concern was with the characteristics of these activities. We wanted to estimate the number of jobs that could be created and the costs of these activities. This information was expected to be useful in further studies of the relative merits of public job-creation activity to determine whether such activity was indeed "better" and therefore desirable. We also examined other dimensions of the activities--their labor-intensity, their skill-mix, their degree of political acceptability, etc.--which might contribute to a more thorough analysis of the benefits and costs expected from these activities.

In estimating the job-creation potential of these activities, an attempt was made to be more comprehensive than past studies by considering both onsite and offsite job-creation. The latter is expected to arise from onsite purchases of nonlabor inputs and through second-round expenditures induced by the onsite labor and nonlabor purchases.

Consideration was also given to a particular aspect of indirect costs--the potential inflationary pressure that could be generated as a result of labor shortages that might emerge as a consequence of these activities. To assess these shortages, estimates of the aggregate number of jobs created and the distribution of these jobs by skill (major occupation group) were compared with estimates of the aggregate supply of labor available to fill these jobs and the distribution of this supply by comparable skills.

Finally, general administrative and organizational issues that might pose significant barriers to implementation of these activities were reviewed and attempts were made to link some of these to particular types of activity.

Information was gathered by means of field visits in Washington--with numerous federal government officials and representatives of over 50 national organizations, ranging from Goodwill Industries to the National Education Association--and in 24 counties located in eight of the ten federal regions.

In addition, correspondence was conducted and/or meetings were held with federal government officials and representatives from a large number of national organizations.

The meetings, both in Washington and in the local communities, focused on (1) identifying activities that might provide meaningful work, (2) determining priorities among these activities, and (3) identifying current or expected problems in (a) implementing PSE projects, (b) running the projects, and (c) phasing out the projects.

Data were also collected during these visits on the costs, labor intensity, skill-mix, and job-creation potential of the public service and public works activities identified as likely candidates for large-scale expansion. Secondary sources, such as PSE project data summaries, various government reports, program budgets, program planning documents, and evaluations, previous studies such as the National Manpower Survey of the Criminal Justice System, and a number of surveys conducted specifically for this research project by particular national organizations, also provided us with useful data.

Major findings are summarized below:

1. The study identified 233 potential job-creation activities in 21 different program areas. This list of activities, together with the summary of their characteristics contained in this study, should provide valuable guidance to prime sponsors and other program administrators charged with the responsibility for developing such activities. The largest number of activities were in the following program areas: public works (37), environmental quality (31), education (27), social services (27), and criminal justice (24).

Estimates of onsite jobs and costs could be generated for 115 activities. These 115 activities were estimated capable of generating 3 million onsite jobs at a budgetary cost of $46 billion, or slightly more than $15,000 per onsite job. These per-job costs ranged as low as $8,000 for cultural activities (including museums and public libraries) to as high as $41,000 for public works. A large number of additional onsite jobs could have been created by the 118 projects for which estimates could not be generated. These estimates of potential job-creation presented here should, therefore, be considered quite conservative on this account. However, while both the 115 and the 233 activities are technically feasible, they may not be the best way to allocate scarce government resources. The value of some of these activities may not be sufficient to justify their costs. And, for other activities, the costs of trying to satisfy the entire demand might prove to be prohibitive. The estimates presented in this study are likely to be biased upward, and therefore to be liberal estimates, on these accounts.

2. The estimated number of onsite and offsite jobs that could be generated varied according to the assumption adopted about fiscal substitution and whether the resources freed by such substitution are ultimately spent. The most reasonable assumption--that, regardless of whether or not there is any fiscal substitution, all the funds are eventually spent, yields an estimated 7.4 million jobs. The effect of these additional jobs is to lower the cost per jobs created from $15,000 (for onsite jobs) to approximately $6,000 for both onsite and offsite jobs.

Moreover, the characteristics of jobs created offsite would differ noticeably from jobs created onsite. For example, while low-skill jobs would constitute over 40 percent of the onsite jobs, they would represent only 15 percent of the offsite jobs. Thus, one effect of offsite job-creation would be to lower the percentage of jobs that could be filled by low-skill workers from over 40 percent to only 25 percent. The actual number of low-skill jobs capable of being generated increases from 1.2 million to over 1.8 million. A major conclusion to be drawn from this finding is that, because the offsite employment effects of these activities is substantial and because these jobs differ in characteristics from onsite jobs, inferences about the average costs and targeting effectiveness of job-creation programs should not be drawn from onsite job-creation and cost data alone.

3. It was found that the markets for white collar workers--both professional-managerial and clerical-sales--and service workers were most likely to experience bottlenecks even in a situation of rough aggregate balance. However, these skill-specific bottlenecks were not considered serious hindrances to the feasibility of implementation of these activities since they could easily be alleviated by drawing on additional supplies available from unemployed and underemployed white collar workers who were not members of the target group. A policy implication to be drawn from this finding is that targeting restrictions and eligibility criteria ought to be flexible enough to allow for some selection from outside the target groups or populations of eligibles specified for the program. Such flexibility will tend to minimize potential skill bottlenecks.

We found that labor-intensive, low-skill activities could serve as a reasonable basis for national job-creation in a structural program. Additional labor-intensive activities could be added to meet the needs of a countercyclical job-creation program as the occasion warranted.

4. The process developed to identify priority areas consisted of several steps. First, areas identified as areas of excess demand by at least 20 percent

of officials and representatives were isolated. Then, from among those areas, the ones selected by at least 10 percent for increases with additional federal funding and the ones selected by a large number of officials and representatives for increases rather than for decreases were isolated. The areas that met all of these test were defined as priority areas.

The area of environmental quality met the test for all local area public officials and representatives contacted. The following areas met the test for all officials and representatives except elected public officials--housing, health, and criminal justice. These areas provide roughly one-sixth to one-fifth of the 3 million jobs created by the activities identified in this study.

5. Administrative and operational issues were examined on the basis of an extensive literature review and from information acquired during the course of our fieldwork. The following issues were identified as potential barriers to effective implementation of activities funded under a large-scale public job-creation program:

- ambiguous program goals,
- red tape,
- inadequate time for planning,
- targeting,
- inadequate resources for training, supervision, and materials,
- pressure group problems (e.g., unions, competition in private sector),
- transition requirements.

Each of these issues can render a project (or groups of projects) infeasible.

Two issues--inadequate time for planning and inadequate resources for training, etc.--were singled out as amenable to policy action that would minimize the difficulties they now produce. The former can be alleviated by more stable funding patterns. The latter can be alleviated by liberalizing the current requirement that no less than 85 percent of the funds be spent on the wage bill. While this liberalization may reduce the onsite job-creation performance of the program, it would increase the range of feasible activities and it may improve the long-range benefits accruing to program participants by providing them with better on-the-job training experience. These improvements may be purchased at the cost of more fiscal substitution, however, unless more effective constraints are imposed on how funds will be utilized and greater effort is made to assure that maintenance-of-efforts provisions are honored.

III. ESTABLISHING PRIORITIES AMONG ACTIVITY-AREAS

Approximately 233 activities were identified in Chapter II as potential candidates for a public job-creation program. It should be obvious that these activities are not of equal importance. Their importance depends on a number of factors that may be summarized as a scale of social priorities. Priorities are determined by a complex process involving the political interaction among many different interest groups, with widely differing social agendas. Elected political officials generally decide what share of a community's resources are to be spent for all activities and how these resources are to be allocated among activities. Generally, the priorities established by this process are the result of a delicate balancing on the part of political decisionmakers, confronted with a wide and frequently conflicting array of demands.

Actual expenditure on public versus private goods and among public goods represents the outcome of this balancing and is generally a compromise among the conflicting claims on these resources. The priorities represented by these claims will clearly vary among interest groups; they will also vary from community to community according to community-specific factors, such as political and fiscal circumstances. Given the complexity in determining these priorities, it is obviously difficult to identify them in advance. We can only observe the outcome of this process--the actual allocation of public resources among activities. Thus, the task of establishing social priorities among the various activities identified in Chapter II becomes a difficult (if not an impossible) one.

In principle, one might be able to infer these priorities from an examination of how successive budgetary increments are allocated among projects.

In practice, since these are hypothetical new resources not yet committed, one must turn to other methods. Community representatives--elected officials, administrators, members of community organizations, etc.—were asked directly, during field visits to local regions, to obtain information from which high-priority projects and activities could be identified.

Unfortunately, the conclusions reached must be heavily qualified. The sample is not representative of all community representatives. A wide variety of agencies and organizations were visited in each locality. Visits with some officials and community leaders led to further leads and subsequent visits with others. While some agencies and organizations were contacted in all localities, others were contacted only when time and circumstances permitted. Hence, even though the site selection techniques were reasonably rigorous, the numbers of respondents or the mix of organizations to be visited at any particular site could not be determined in advance.[1]

Moreover, even if the sample were representative, the data represent only the views about priorities of the different groups of community representatives visited. Since no particular official or community represention necessarily represents the views of the entire community (or even all members of his or her particular group), it would be unwise to generalize from their responses. Also, aggregation of the responses for all the different kinds of officials and community representatives would create an illusory and erroneous sense of consensus. Hence, the data presented here are by the type of representative or organization visited.

---

[1] Site selection and visits are discussed in detail in Chapter I.

Discussions were held with five types of community representatives classified into three broad groupings:

> Elected officials -- e.g., mayors, members of city councils and community commissions; school board members, etc.
>
> Non-elected officials -- (a) those without specific program or agency responsibilities such as city managers and their assistants; executive staff in the offices of the mayor, city council or county commission; special assistants to a governor or other elected official, etc.
>
> (b) those with program responsibility, e.g., heads of agencies for planning; housing; urban renewal; social services; corrections and other criminal justice agencies; economic development programs, etc.
>
> Staff Members of community-based organizations -- (a) those without specific project responsibilities, such as minority group leaders; officials of the local chamber of commerce; United Way; League of Women Voters; and cultural organizations.
>
> (b) individuals directly responsible for delivery of services, e.g., staffs in public-supported community centers; services for the elderly; training and vocational facilities; youth organizations; Goodwill, etc.

Discussion centered on (1) identifying unmet public needs; and (2) describing program changes that would be desirable in the event of increases or decreases in federal funds. The material acquired was used as input to a multi-dimensional analysis to identify projects and activities that might be considered high priority. This Chapter presents the results of that analysis and identifies activities that might be considered high priority areas for an expanded public job-creation program.

Unmet Needs

Officials and representatives were asked about areas of public needs that remained to be met in their jurisdictions. Nearly everyone identified at least one area and, in most cases, several areas. Table 3.1 summarizes

TABLE 3.1

AREAS IDENTIFIED AS HAVING UNMET NEEDS

Major Area		Specific Examples
Education	--	special education (bilingual, disadvantaged, etc.) teacher aides; school building maintenance;
Energy	—	insulation; winterization;
Environmental	--	improvements of water treatment and storage; sewerage and solid waste disposal; flood control and drainage;
Community Improvements	—	street repairs, clean-up and beautification; neighborhood revitalization;
Criminal Justice	—	renovation, rehabilitation, maintenance of correction facilities; staff support for police activities;
Fire Prevention/ Protection	--	staff support for departments; fire hazard inspections;
Health	--	staff support (including paraprofessionals) for hospitals, HMO's, community health clinics; mental health programs;
Housing	--	rehabilitation, clearing land in blighted areas;
Local Govt. Buildings	--	build, expand, renovate, or maintain administrative buildings, civic centers, auditoria;
Parks and Recreation	--	maintenance and landscaping; P&R supervisors and aides;
Private Sector-Related	--	industrial parks; central-city commercial area improvements;
Youth Social Services	—	staff support for day-care services for infants; pre-school; and after-school children;

TABLE 3.1 (continued)

Social Services for Elderly and Handicapped	—	staff support for senior citizen centers; for transportation; and home health and other at-home services;
General Social Services	--	staff support for crisis intervention; for outreach services to disadvantaged; CETA training, counseling, etc. for special target populations; family counseling;
Transportation	—	bridges; highways and roads

the areas identified, linking major areas, comparable to the 21 program areas described in Chapter II, with more specific areas, comparable to the 233 activities discussed in Chapter II.

Table 3.2 shows the percentage of each of the five types of community representatives who mentioned any particular area or areas.[1] The frequency with which particular areas were identified varied by type of community representative. To illustrate, while about one-half of the representatives from community-based organizations identified education as a major area with unmet needs, only one-tenth of elected officials made such a selection. A major reason for this finding may be that these representatives typically have different sets of responsibilities and are sensitive to differing kinds of community pressures. For example, representatives of community-based organizations may have identified social services as an area of unmet needs more frequently than other community representatives because many community-based organizations are social service providers. In addition to the variation among different types of community representatives, there was considerable variability within any given type. For example, the fact that forty-four percent of the elected officials identified community improvements as an area of unmet needs also means that fifty-six percent of these officials did not. Only three areas were cited by more than half of any group of community representatives as areas with unmet needs. Thus, there does not appear to be much consensus even within any group of representatives.

There are many possible reasons for the variation within and among types of community representatives summarized in Table 3.2. Among these are differences in responsibilities, preferences, fiscal conditions, and political

---

[1] The response rate to this question was 100 percent. Not one respondent indicated that there were no unmet needs.

TABLE 3.2

FREQUENCY WITH WHICH AREAS WERE IDENTIFIED AS HAVING UNMET NEEDS BY TYPE OF COMMUNITY REPRESENTATIVE*

		Non-Elected		CBO Staff	
	Elected	With Responsibility	Without Responsibility	With Responsibility	Without Responsibility
	N=48	N=121	N=41	N=64	N=29
Community Improvements	44	21	27	13	24
Criminal Justice	46	21	20	8	28
Education	10	36	24	47	52
Environmental	67	48	39	25	31
Transportation	33	26	20	14	10
Housing	31	38	37	27	28
Social Services for Elderly; Handicapped	15	31	17	39	31
Youth Social Services	13	17	17	56	21
General Social Services	19	26	7	48	34
Health	21	22	20	38	21
Cultural	4	4	—	13	7
Energy	—	12	5	6	10
Fed. Govt. Staffing	—	**	**	—	—
Fire Prevention	21	6	15	—	—
Private Sector-related	27	16	20	17	10
Parks and Recreation	23	26	22	8	14
Local Govt. Staff	4	18	7	17	17
Local Govt. Bldgs.	23	11	24	—	7
Food; nutrition related	—	**	—	8	3

*Columns total more than 100 percent because of multiple answers.

**Less than 3 percent.

orientation. To some extent, these differences in responsibilities have been accounted for by tabulating our findings by type of community representative. However, the remaining factors still create a considerable amount of variation in perceptions of unmet needs; and they deserve further investigation.

Because of the variability among and within types of community representatives, it is difficult to identify high priority need areas from Table 3.2. However, even if each type of community representative clearly identified particular areas--for example, by having over ninety percent identify them--further analysis would be necessary to determine how far these choices reflected the perceptions of the entire community rather than those of particular interest groups. This issue is probably most relevant in the case of representatives from community-based organizations and is probably least relevant in the case of elected officials. One might even argue that, because of their responsibilities, elected officials come closest to reflecting the priorities of the entire community. But, for purposes of this analysis, we assume that no particular group of community representatives fully reflects community preferences. Instead, we assume that projects and activities identified by most groups have the widest base of support in the community.

To acquire a clearer sense of priority, we have ranked areas according to the frequency with which they were identified by each group of community representatives. Table 3.3 summarizes these rankings. It clearly shows that only three areas are identified by more than a majority of the respondents. Thus, even areas ranking near or at the top for any group of community representatives reflected the choices by a weak plurality.

Consistent with the notion of broadly-based community support, three areas--education, environment, and housing--ranked in the top five areas

TABLE 3.3

RANK ORDER OF AREAS IDENTIFIED AS HAVING UNMET NEEDS BY FREQUENCY CITED[1/]
(percentages in parentheses)

		Non-Elected				CBO Staff			
Elected		With Responsibility		Without Responsibility		With Responsibility		Without Responsibility	
1. Environmental	(67)	1. Environmental	(48)	1. Environmental	(39)	1. Youth Soc. Services	(56)	1. Education	(52)
2. Criminal Justice	(46)	2. Housing	(38)	2. Housing	(37)	2. Gen. Soc. Services	(48)	2. Gen. Soc. Services	(34)
3. Community Improvements	(44)	3. Education	(36)	3. Community Improvements	(27)	3. Education	(47)	3. Soc. Serv. Elderly/ Handicapped	(31)
4. Transportation	(33)	4. Soc. Serv. Elderly/ Handicapped	(31)	4. Education	(24)	4. Soc. Serv. Elderly/ Handicapped	(39)	4. Environmental	(31)
5. Housing	(31)	5. Parks: Recreation	(26)	5. Govt. Buildings	(24)	5. Health	(38)	5. Housing	(28)
6. Private Sector Related	(27)	6. Gen. Soc. Services	(26)	6. Parks and Recreation	(22)	6. Housing	(27)	6. Criminal Justice	(28)
7. Government Bldgs.	(23)	7. Transportation	(26)	7. Private Sector	(20)	7. Environmental	(25)	7. Community Improve.	(24)
8. Parks and Recreation	(23)	8. Health	(22)	8. Health	(20)	8. Admin. Staffing	(17)	8. Youth Soc. Services	(21)
9. Fire Prevention/ Protection	(21)	9. Community Improve.	(21)	9. Transportation	(20)	9. Private Sector	(17)	9. Health	(21)
10. Health	(21)	10. Criminal Justice	(21)	10. Criminal Justice	(20)	10. Transportation	(14)	10. Admin. Staffing	(17)
11. Gen. Soc. Services	(19)	11. Admin. Staffing	(18)	11. Youth Soc. Services	(17)	11. Community Improve.	(13)	11. Parks and Recreation	(14)
12. Social Ser. Elderly/Handicapped	(15)	12. Youth Soc. Services	(17)	12. Social Serv. Elderly/Handicapped	(17)	12. Cultural	(13)	12. Energy	(10)
13. Youth Soc. Services	(13)	13. Government Bldgs.	(11)	13. Fire Prevention/ Protection	(15)			13. Private Sector	(10)
14. Energy	(10)							14. Transportation	(10)
N=48		N=121		N=41		N=64		N=29	

[1/] Need areas with less than 10 percent not included.

for four of the five groups of community representatives. An additional area —social services for the handicapped and the elderly—ranked as one of the top five areas for three of the five groups. However, two of these three groups were representatives of community-based organizations and this area ranked only 12th out of the 14 areas summarized for elected officials. If representatives of community-based organizations are least likely to reflect total community preferences and elected officials are more likely to reflect these preferences, this finding may not necessarily indicate widely based community support.

Another way of assessing community support is to examine the areas identified as having unmet needs by a substantial proportion of several types of community representative, regardless of ranking. Table 3.4 summarizes these findings.

Environmental and housing needs were the only areas mentioned by at least 25 percent of all five groups. At least twenty-five percent of three groups identified the areas of education, social services for the elderly and the handicapped, and general social services. Again, social services are identified by representatives of community-based organizations, but not by elected officials. The explanation may be that representatives of community-based organizations are in direct contact with target groups in need of services.

The choice of a 25 percent cut-off point, of course, is arbitrary and can result in the omission of some critical areas. For example, health-related programs were mentioned by at least 25 percent of only one community group, but the remaining four groups cited this area at a 20-22 percent rate.

TABLE 3.4

AREAS IDENTIFIED AS HAVING UNMET NEEDS CITED BY 25 PERCENT OR MORE OF A GIVEN GROUP OF COMMUNITY REPRESENTATIVES BY NUMBER OF GROUPS IDENTIFYING THE AREA

All Five	Four	Three	Two	One
Environmental	None	Education	Criminal Justice	Youth Social Services
Housing		Soc. Serv. for Elderly and Handicapped	Community Improv.	Health
			Transportation	Private Sector
		General Social Services		Parks and Recreation

Criminal justice needs were cited by 20 percent or more of four of the groups.[1]

Moreover, political or community consensus is only one way to assess priorities. Some infrequently-identified areas may nevertheless offer opportunities for effective public investment. For example, the area of private sector development was identified by at least 25 percent of only one group of respondents, the elected officials. However, the development of industrial parks or the improvement of central city commercial areas may have more far-reaching private-sector employment payoffs than many of the public-sector activities discussed here. And elected officials, with their sensitivity to the preferences of the more general electorate, are more likely to be aware of these payoffs than the other officials and representatives.

Program Choices in the Event of Funding Increases or Decreases

Another way of analyzing priorities is to examine how respondents would deal with changes in funding. Presumably, they would use additional funds for activities which, given their current spending patterns, they consider their highest priority. Similarly, they would react to a decreased level of funding by cutting back on activities which, for current distributions of expenditures, are considered least important.

Officials and representatives were asked which activities they would increase or initiate given 25 percent increased funds and which activities they would decrease or eliminate given 25 percent decreased funds. The hypothetical questions were asked as part of an effort to introduce a sense of resource constraints to the setting of priorities. Since increases or decreases this large are unlikely, the hypothetical questions get at the extremes of priorities that might follow in the event of funding changes.

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[1] If a 20-percent cutoff is used, we find that there are three programs cited by all five community groups: environmental, housing, and health; three programs selected by four groups--criminal justice, community improvements, and education; and three programs cited by three groups--services for the elderly and handicapped, general social services, and parks and recreation. In a subsequent part of this section, we nevertheless make use of the 20 percent cutoff as one component of the multi-dimensional approach designed to "zero in" on a sharper identification of priorities.

Of course, an analysis of actual behavior would have shown priorities more reliably than the responses to hypothetical responses presented here. An analysis of actual decisionmaking, however, would require an ambitious modelling effort beyond the scope and resources of this study. The main purpose of the field visits was to acquire information on new projects and activities. The hypothetical responses about priorities were a relatively costless addition.

Sizeable proportions of some groups were unable to answer either question. Only 17 percent of the elected officials gave no response to both questions. Corresponding proportions for the other three groups were: 37 percent of non-elected with responsibility; 39 percent of non-elected without responsibility; and 59 percent of the two groups of CBO staffs combined. These contrasts in response rates reflect, no doubt, differences in the decisionmaking responsibilities and experiences of the different types of respondents. Representatives reflecting the broadest base in the community (e.g., elected officials) had the highest response rates and those reflecting the narrowest (e.g., representatives of community-based organizations) had the lowest response rates. However, the CBO representatives selected the largest number of specific areas as candidates for additional funding--an indication that they may be less aware of fiscal constraints.

The responses to the hypothetical questions covered a wide range. They were classified according to the same need-areas discussed earlier. Because only small numbers of CBO officials were able to answer the questions, CBO staff with and without program responsibility are combined. Thus, only four types of respondents are compared.

Areas selected for increase are summarized in Table 3.5 Similarly, areas selected for possible reduction by those who responded are summarized in Table 3.6. A comparison of the two tables reveals that more areas were selected for increases (17) than for decreases (8). However, a substantial fraction of each type of community representative--over one-fifth--replied that they would respond to decreased federal funding by reducing all activities (across-the-board).[1] It is interesting to note that none of the community representatives chose to use additional federal funds for across-the-board increases. This suggests that many of these representatives have clearer ideas of areas that are likely candidates for expansion than they do of areas that are likely areas for contraction. An alternative (and perhaps more cynical) explanation of this finding is that the community representatives visited did not believe the scenario involving a reduction in federal funds. Hence, they chose a response--cutting across-the-board--which, in practice, would be equally unrealistic.

Elected officials were the only groups mentioning more areas for reduction than for increase. This may be because they are more sensitive to the fiscal constraints faced by local government, while other types of officials are more aware of needs that could be met by new or increased programs. Again, these differences deserve further exploration.

Also, the most frequently selected areas for expansion by both elected and non-elected officials--community improvements and housing--were areas requiring types of activity which could be expected to be of finite duration and could be

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[1] It is not clear whether these activities refer to all local government activities or all federally funded government activity. An argument can be made in favor of the former interpretation on the grounds that federal funds are ultimately highly fungible in the local budget process so that tradeoffs between federally funded activities and non-federally funded activities may be feasible.

TABLE 3.5

AREAS SELECTED FOR INCREASES BY TYPE OF COMMUNITY REPRESENTATIVE

(percent in parentheses)

Elected Officials		Non-Elected Officials				CBO Staff	
		With Managerial Responsibility		Without Managerial Responsibility			
Community Improvement	(18)	Housing	(35)	Community Improvement	(35)	Gen. Soc. Services	(61)
Environmental	(18)	Education	(28)	Criminal Justice	(30)	Education	(50)
		Environmental	(27)	Transportation	(23)	Soc. Services for Elderly/Handicapped	(39)
		Community Improvement	(26)	Environmental	(19)	Youth Soc. Services	(34)
		Parks & Recreation	(24)	Health	(19)	Cultural	(21)
		Criminal Justice	(22)	Housing	(19)	Local Govt. Staff	(18)
		Private Sector Related	(19)	Fire Prevention	(15)	Health	(16)
		Soc. Services for Elderly/Handicapped	(18)	Parks & Recreation	(15)	Parks & Recreation	(16)
		General Social Services	(14)	Private Sector	(12)	Private Sector	(13)
		Health	(11)	Local Govt. Bldgs.	(12)	Environmental	(13)
		Youth Soc. Services	(11)	General Social Services	(12)	Housing	(11)
				Youth Soc. Services	(12)	Criminal Justice	(11)

TABLE 3.6

AREAS SELECTED FOR DECREASES BY TYPE OF COMMUNITY REPRESENTATIVE

(percent in parentheses)

	Non-Elected Officials		
Elected Officials	With Managerial Responsibility	Without Managerial Responsibility	CBO Staff
Community Improvement (23)	Parks and Recreation (32)	Across-the-Board (27)	Across-the-Board (21)
Across-the-Board (20)	Across-the-Board (27)	Parks and Recreation (19)	General Social Services (16)
General Social Services (15)	Community Improvement (16)	Housing (12)	Education (13)
Local Government Buildings (15)	Housing (14)	Environmental (12)	Parks and Recreation (11)
Criminal Justice (10)	Environmental (12)		

done on a project basis. This suggests that local officials will be reluctant to commit additional federal resources to support ongoing activities because of the administrative and political problems they would encounter in laying off staff if the federal funding were reduced or terminated.

Only two areas were selected by more than half of any group of community representatives--general social services and education, which were selected for increase by fifty percent or more of the representatives of community-based organizations. These relatively low proportions mean that large fractions of the representatives visited chose not to select any particular need-area. This finding is another indication of the considerable variability in ranking by level of priority within any group of representatives and reinforces the earlier impression that there is little consensus about what these rankings should be. This lack of consensus reflects community-specific variations in fiscal, economic, and political conditions, and differences among groups of community representatives in preferences and perceptions of their constituencies. Further efforts to isolate the effects of these factors might prove valuable in providing a clearer picture of priority-setting.

To derive some notion of the broadness of the base of these findings, areas selected by at least three of the groups of community representatives were examined. Only one area--environmental--was selected for increases by all the groups. Seven additional areas were selected for increases by three of the groups:

Community Improvements
General Social Services
Parks and Recreation
Housing
Youth Social Services
Health
Private-sector Development

Thus, only eight of the seventeen areas selected for expansion can be said to have some broad base of support in the community.

On the down side of this exercise, all groups opted for across-the-board decreases in expenditure in response to a hypothesized decrease in federal funding. However, three of the four types of respondents--the elected and both types of non-elected officials and representatives of community-based organizations--singled out Parks and Recreation as a candidate for budget cuts. This suggests that this area may have the broadest base of support in the community as a likely candidate for contraction.

The finding of a broad base of support for both expansion and contraction of the Parks and Recreation Area is not necessarily inconsistent. This particular area may represent a truly marginal set of activities, primarily of the service-providing type, which are supported with additional funding and curtailed as funding is withdrawn. Many instances were found in which an area selected by a community representative as a candidate for expansion was also selected by the same representative for contraction. Apparently, for these representatives, filling unmet social needs in these areas hinges critically on the availability of funds.

Non-elected officials in communities with low unemployment were most likely to display such selection behavior. This suggests that availability of funds may affect priority-setting most strongly in communities in which there are relatively few pressing unmet social needs. If needs were urgent, representatives would strongly favor them for expansion and be reluctant to recommend any contraction. Another implication is that representatives in communities with low unemployment should be less likely to select essential areas for expansion--and would therefore be more likely to select the same marginal areas for expansion and contraction.

Responses recommending "across-the-board" cuts also were apparently related to local unemployment levels. Preliminary analysis suggests that persons in areas with relatively low unemployment are slightly more likely to cut across-the-board, while those from high unemployment areas are more likely to target cuts in specific areas.

Another way of judging priorities from the answers to these questions is to compare the fraction selecting each area for expansion with the fraction selecting each for contraction. One might index the relative importance of an area by the difference between the fraction selecting it for expansion and the fraction selecting it for contraction. However, classifying across-the-board decreases raises serious problems. Failure to allocate these decreases in some way among the relevant need areas would understate the fraction selecting any particular area for contraction and would therefore overstate the importance of the unmet need. On the other hand, to add the full across-the-board percentage to the percent favoring reduction in each need-area would probably understate unmet needs since an across-the-board cut would reduce expenditure in any given area by some fraction of what would have happened had the choice been made to cut only in that particular area. A compromise with these two extreme methods was chosen by allocating the percent who elected the across-the-board cut equally among the areas identified.

Table 3.7 summarizes the results of this analysis for elected officials. Columns (1) and (2) describe the percent of elected officials who selected each area for expansion and contraction, respectively. Column (2) also includes the percentage who opted for across-the-board cuts. Column (3) adjusts the percentage in column (2) to reflect the reallocation of across-the-board respondents. In this case, since twenty percent of the elected officials had to be allocated among ten areas, the adjustment consisted of adding two percentage points to each area listed. Column (4) summarizes our index of relative importance. Only four areas--environment, housing, private sector development,

TABLE 3.7

AREAS SELECTED BY ELECTED OFFICIALS FOR INCREASED AND DECREASED FUNDING
(in percentages)

N=40

Major Area	(1) Increase	(2) Decrease	(3) Adjusted Decrease	(4) Difference (1) - (3)
Environmental	18	8	10	+8
Housing	8	-	2	+6
Private Sector Development	5	-	2	+3
Social Services for Youth	5	-	2	+3
Transportation	5	5	7	-2
Social Services for Elderly and Handicapped	3	5	7	-4
Community Improvements	18	23	25	-7
Criminal Justice	5	10	12	-7
General Social Services	5	15	17	-12
Local Govt. Buildings	3	15	17	-14
Across-the-Board Decreases	-	20		

and social services for youth--had more officials opting for increases than for decreases.

Tables 3.8-3.10 summarize the results for non-elected officials and representatives of community-based organizations. In contrast to elected officials, only two areas--parks and recreation and social services for the elderly and the handicapped--had fewer officials or representatives opting for increases than for decreases.

Table 3.11 summarizes the top five areas (ranked in terms of the difference between percent opting for expansion and percent opting for contraction) by type of community representative. Environment is the only area that appears to have a wide base of support, appearing in the top rankings of both elected and non-elected officials. It is also interesting to note that the range for elected officials is considerably lower than those of non-elected officials or representatives of community-based organizations. A possible implication is that elected officials tend to be more conservative than the other groups of officials and community representatives in considering expansion of public services. This conservatism, also reflected in earlier findings, could be rationalized as the result of their heightened awareness of fiscal constraints faced by the public sector and their greater sensitivity to general voter preferences (which would place greater weight on private sector consumption made possible by lower taxes) rather than specific interest group preferences.

A Multidimensional Approach to Program Priorities

Each of the approaches to program priorities discussed above (i.e., asking about unmet needs, and activities that would be selected for changes in expenditures in the event of changes in federal funding) has its limitations. None gives an adequate picture of priorities.

TABLE 3.8

AREAS SELECTED BY NON-ELECTED OFFICIALS WITH PROGRAM RESPONSIBILITY FOR INCREASED AND DECREASED FUNDING

(in percentages)

N=74

Major Area	(1) Increase	(2) Decrease	(3) Adjusted Decrease	(4) Difference (1) - (3)
Education	28	2	3.7	+24.3
Housing	35	14	15.7	+19.3
Criminal Justice	22	4	5.7	+16.3
Private Sector Development	19	2	3.7	+15.3
Environmental	27	12	13.7	+13.3
Social Services for Elderly and Handicapped	18	7	8.7	+9.3
Community Improvements	26	16	17.7	+8.3
Health	11	2	3.7	+7.3
Local Govt. Staff	9	-	1.7	+7.3
Energy	7	-	1.7	+5.3
Social Services for Youth	11	5	6.7	+4.3
General Social Services	14	9	10.7	+3.3
Food; Nutrition	5	-	1.7	+3.3
Fire Prevention Protection	5	2	3.7	+1.3
Local Govt. Buildings	7	5	6.7	+0.3
Parks and Recreation	24	32	33.7	-9.7
Across-the-Board Decreases	-	27		

TABLE 3.9

AREAS SELECTED BY NON-ELECTED OFFICIALS WITHOUT PROGRAM RESPONSIBILITY FOR INCREASED AND DECREASED FUNDING

(in percentages)

N=26

Major Area	(1) Increase	(2) Decrease	(3) Adjusted Decrease	(4) Difference (1) - (3)
Community Improvements	35	4	6	+29
Criminal Justice	31	4	6	+25
Transportation	23	4	6	+17
Environmental	19	4	6	+13
Health	19	4	6	+13
Fire Prevention; Protection	15	-	2	+13
Private Sector Development	12	4	6	+6
Local Govt. Buildings	12	4	6	+6
Housing	19	12	14	+5
General Social Services	12	8	10	+2
Social Services for Youth	12	8	10	+2
Social Services for Elderly and Handicapped	8	8	10	-2
Across-the-Board Decreases	-	27		

TABLE 3.10

AREAS SELECTED BY REPRESENTATIVES OF COMMUNITY-BASED ORGANIZATIONS FOR INCREASED AND DECREASED FUNDING

(in percentages)

N=38

Major Area	(1) Increase	(2) Decrease	(3) Adjusted Decrease	(4) Difference (1) - (3)
General Social Services	61	16	17.2	+43.8
Education	50	13	14.2	+35.8
Social Services for Elderly and Handicapped	39	3	4.2	+34.8
Social Services for Youth	34	5	6.2	+27.8
Cultural	21	-	1.2	+19.8
Health	16	-	1.2	+14.8
Local Govt. Staff	18	3	4.2	+13.8
Private Sector Development	13	-	1.2	+11.8
Environmental	13	-	1.2	+11.8
Housing	11	-	1.2	+9.8
Community Improvements	8	-	1.2	+6.8
Criminal Justice	11	5	6.2	+4.8
Parks and Recreation	16	11	12.2	+3.8
Social Services for Women	8	3	4.2	+3.8
Social Services-Other	8	3	4.2	+3.8
Food; Nutrition	5	-	1.2	+3.8
Transportation	5	3	4.2	+0.8
Across-the-Board Decreases	-	27		

TABLE 3.11

RANKING OF AREAS BY INDEX OF RELATIVE IMPORTANCE AND TYPE OF COMMUNITY REPRESENTATIVE

Elected Officials	Non-elected Officials		Representatives of Community-Based Organizations
	With Managerial Responsibility	Without Managerial Responsibility	
Environment (+8)	Education (+24)	Community Improvement (+29)	General Social Services (+49)
Housing (+6)	Housing (+19)	Criminal Justice (+25)	Education (+36)
Private Sector (+3)	Criminal Justice (+16)	Transportation (+18)	Social Services for Elderly & Handicapped (+35)
Social Services for Youth (+3)	Private Sector (+15)	Environment (+13)	Social Services for Youth (+28)
Transportation (-2)	Environment (+13)	Health (+13)	Cultural (+20)

Therefore, our final approach to developing priorities among areas combines the responses to the question about unmet needs with the responses identifying areas selected for expenditure increases and decreases in the event of changes in federal funds. First, we identified for each group of community representatives those categories of unmet needs cited by at least 20 percent. Second, we identified from that list areas which (a) were selected by at least 10 percent of the group for increases with additional funds and (b) by a greater proportion for increases than for decreases. For example, housing was cited by 37 percent of non-elected officials without managerial responsibilities as an area of unmet needs. Housing activities would also be increased by 19 percent of that group if additional federal funds were available, and decreased by only 14 percent if federal funds were taken away. By all three criteria, housing-related programs would be deemed a high priority activity for this group of officials.

Table 3.12 shows the areas that met these tests by type of community representative. The results are our best overall estimate of priority areas. Environment (usually meaning water treatment and storage, sewerage and solid waste disposal, flood control and drainage) was the only area meeting the tests for all four respondent groups. Housing, Health, and Criminal Justice qualified for three of the four groups (all but elected officials). Education, General Social Services, and Social Services for the Elderly/Handicapped were each identified by two of the groups. Youth Social Services, Community Improvements, Transportation (primarily roads) and Local Government Buildings (primarily renovation and maintenance) were selected by one group. In all, eleven of the 18 need or program areas were selected by at least one group, and seven were not.

TABLE 3.12

AREAS QUALIFYING FOR EXPANSION UNDER LARGE-SCALE PUBLIC JOB-CREATION ON THE BASIS OF FULFILLING UNMET NEEDS

Major Areas	Elected Officials	Non-Elected Officials		Representatives of Community-Based Organizations
		With Managerial Responsibility	Without Managerial Responsibility	
Environment	X	X	X	X
Housing		X	X	X
Health		X	X	X
Criminal Justice		X	X	X
General Social Services			X	X
Soc. Serv. for Elderly/Handicapped		X		X
Education			X	X
Community Improvement		X	X	
Services for Youth				X
Transportation			X	
Local Government Buildings			X	

Part or all of these may be taken to represent local priorities, depending on the number of groups we take as signifying community consensus. The four areas endorsed by at least three groups--environment, housing, health, and criminal justice--are surely the strongest candidates for selection on the basis of these criteria. These projects are capable of creating at least 618,000 jobs at a cost of $7.3 billion and constitute slightly more than 20 percent of the total jobs that could be created by all program areas. In addition, the four areas selected by two groups--general social services, social services for the elderly and the handicapped, education, and community improvements--might also be considered as possible additional candidates for selection.

IV. ESTIMATING THE OVERALL EMPLOYMENT EFFECT OF PUBLIC SERVICE EMPLOYMENT PROGRAMS

Introduction

The job-creation potential of the projects/activities identified in Chapter II defies simple analysis. On one hand, it can be more than simply onsite jobs because of its external (or offsite) employment effects. On the other hand, it can be less than these jobs because of fiscal substitution.

External or offsite employment effects arise for two reasons: First, expenditure of resources on nonlabor inputs can create new employment--directly in industries and firms that produce those inputs and indirectly in industries and firms that are suppliers of these industries and firms. Second, expenditures by workers newly-hired, either onsite or in other industries or firms, can induce still more new employment opportunities.

Fiscal substitution, by using the public job-creation resources to undertake projects/activities that would otherwise have been funded locally, can attenuate the onsite, direct and indirect employment effects of these projects/activities. However, it is impossible to determine how it will affect the induced second-round employment effect without knowing more about exactly how the displaced funds are utilized by the local governments.[1] If, for example, they are used to reduce local taxes, then the result will be a larger induced employment effect (arising from the additional expenditures of taxpayers) than would have been the case had there been no tax reduction. Thus, given substitution, the employment effects of the public job-creation program might be more similar to those that would have been experienced had there been a general tax cut.

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[1] Fechter (1977, 1978); Hamermesh and Borus.

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This Chapter seeks to shed some light on exactly how many jobs can be created through expenditure on the projects/activities identified in Chapter II. We describe:

- the analysis used to estimate the overall job-creation effect of these projects as well as the distribution of these jobs by skill (i.e., occupation and education);
- the methods used to allocate the nonlabor costs of these projects/activities among supplying industries and to generate crude estimates of the rate of fiscal substitution;
- the nine sets of project/activity clusters which served as input to our analysis; and
- the job-creation effects of the project/activity clusters by skill.

The major implication that emerges from the findings of this Chapter is that one cannot look only at the direct onsite job-creation effects of these projects to fully understand their employment impact. A substantial amount of of the employment impact of a public job-creation program will be felt indirectly through offsite employment effects. Our findings are as follows:

- Depending on assumptions made about the impact of fiscal substitution, total job-creation (both onsite and offsite) from the 114 projects used in this analysis can range from 3.5 million to 7.4 million jobs. Of these, roughly 2.2 million to 4.6 million would be offsite jobs.
- The cost per job created ranges from $5,800 to $12,100 depending on the assumptions made about the impact of substitution. These costs are about 15 to 30 percent higher for labor-intensive projects.
- Employment multipliers for these projects average 1.69, suggesting that 169 total jobs can be created for every 100 new onsite jobs. This multiplier varies substantially among project types, ranging from a low of 0.5 for labor-intensive, high-skill projects, such as staff support in the education and criminal justice areas, to a high of 5.23 for nonlabor-intensive, high-skill projects, such as public works.
- The rate of substitution assumed for all projects was 0.52. It ranged from a low of 0.43 for nonlabor-intensive low-skill projects to a high of 0.57 for labor-intensive, low-skill projects.

- Projects utilizing relatively large amounts of low-skill labor were able to provide 1.2 million to 2.5 million onsite and offsite jobs.

- About one-fourth of the jobs created in all projects could be filled by low-skill labor (i.e., laborers and service workers). However, the skill distribution of these jobs, measured in terms of occupation, differs between jobs created onsite and jobs created offsite. About one-third of the onsite jobs, but only 15 percent of the offiste jobs can be filled by low-skill labor.

- The skill distribution of these jobs, measured in terms of education, does not differ quite so dramatically as in the case of occupation. Approximately 35 percent of the jobs created both onsite and offsite can be filled by workers who did not complete high school. However, there is a notable difference in education distribution between onsite and offsite jobs created for jobs requiring more than a high school education; approximately one-third of the onsite jobs, but only one-fourth of the offsite jobs can be filled by workers with this amount of education.

An Overview of the Model

Estimating Offsite Employment Changes. As discussed earlier, offsite employment effects can be decomposed into two components: (1) direct and indirect employment effects arising from the purchase of nonlabor inputs, and (2) induced employment effects arising from second-round expenditures by those newly-employed (both onsite and offsite) as a result of the projects/activities. We estimate both sets of effects on the basis of a particular model, the Golladay-Haveman model.[1] This model is used to derive estimates of the direct and indirect employment effects (from an input-output model) and induced employment effects (from a consumption-expenditure model).

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[1] Originally, the Golladay-Haveman Input/Output Simulation Model (G-H model) was designed and developed to simulate the effect of sets of alternative tax and transfer policies on the regional distribution of earnings and employment in the United States. A sequential simulation model based on a set of input/output modules, this model is composed of five primary submodules: the tax-transfer module, the consumption expenditure module, the gross output module, the factor employment module and the income distribution module. The tax-transfer module estimates household income changes as a result of changes in federal tax or transfer policies. The consumption expenditure module

The input-output model, based on the work of Polenske, accounts for interindustry and interregional production trade flows for the production of 79 classes of commodities.[1] We input to this model nonlabor expenditures of the 115 PSE projects classified by the 79 industries in 23 state regions to generate estimates of the value of material, supplies, and equipment required to support these expenditures.[2]

The skill requirements for producing this output are derived from an employment model with two major components: (1) an array of employment-output coefficients (to translate the output generated by our projects into aggregate employment requirements); and (2) an array of occupational-employment coefficients (to allocate the aggregate employment demand among skills). The former coefficients are determined by labor productivity; the latter coefficients

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1. (p. 78, continued)
estimates the consumption responses by households caused by changes in their disposable income. The gross output module estimates the gross output, sector by sector, for 79 sectors and for 23 state regions required to produce the final demand generated as a result of income changes (and thus changes in consumption patterns). The factor employment module estimates the labor requirements by region and industrial sector to produce the output estimated from the gross output module. These estimate the distribution of the changes in earned income resulting from changes in the demand for workers for 15 earnings classes. A more detailed description of this model can be found in Golladay and Haveman (1977, 1976) and in Jones and Thorpe.

[1] This model is based on a Leontief production technology; thus, it is based on the standard input-output model assumptions of linearity, additivity, and nonsubstitutability for each of the 79 industrial sectors. It also assumes stability in the interregional trade flows. Model parameters are derived from five sets of data:

1. 1963 interindustry flows;
2. 1963 interregional trade flows;
3. base-year final demands;
4. 1970 projected final demand; and
5. 1980 projected final demand.

[2] Note that this value consists of two components: (1) the value from industries that are direct suppliers of resources to the projects; and (2) the value from industries that supply the suppliers. The total value of these resources is often called "direct and indirect" expenditure requirements.

summarize the distribution of skills (indexed by occupation) by industry. It is assumed that these coefficients have been stable implying stability in both labor productivity and the occupational distributions of employment.

The assumption of stable labor productivity is clearly suspect and probably serves to bias upward our estimates of the direct and indirect employment effect. There are two reasons for suspecting this bias. First, while the model incorporates changes in labor productivity to the year 1973 in its coefficients, further changes in labor productivity have actually occurred since that time and probably bias our estimates of employment requirements upward by about five percent.[1] Second, while the assumption may be defensible when simulating small changes in demand, it becomes more tenuous when confronting large changes, such as the ones contemplated in this study. The reason is that such large changes are likely to alter the relative cost of labor inputs[2] and, over time, this is likely to induce employers to substitute nonlabor for labor inputs in their production processes, further raising labor productivity from its assumed 1973 level.

The employment model is further augmented by a set of coefficients which allow us to transform the occupational requirements into educational requirements. These coefficients are assumed equal to the 1970 distribution of the employed work force within each occupation by education. No attempt is made

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[1] Annual changes in labor productivity from 1973 to 1977 are summarized below:

Year	Percent change
1974	-2.8
1975	1.8
1976	4.2
1977	2.4

See, Economic Report of the President, January, 1978, p. 300.

[2] The basis for this speculative scenario is the presumption that the elasticity of supply of labor is smaller than the elasticity of supply of materials and capital in the long run.

to adjust these coefficients for the rising educational levels of the work force. Our estimates of the educational requirements are therefore probably biased downward. The bias appears to be most serious for professional and managerial occupations and for nonfarm laborers, each of which experienced a rise of over one year in the educational attainment of their employed labor forces.[1]

Induced second-round effects are derived from a consumption model which distributes household demand generated by the increased earnings among 56 commodities. The sensitivity of these expenditures to changes in income is derived from two parameters for each commodity: (1) the marginal propensity to consume, and (2) the marginal response of budget shares to changes in income. The first parameter nets out savings and derives the total expenditure effect and the second parameter allocates the incremental expenditure among commodities.

Golladay and Haveman base their analysis on the 1960-61 Survey of Consumer Expenditures. They explore a number of consumption models based on alternative assumptions about (1) the definition of income and (2) the behavior of the marginal budget share with respect to income change. We have selected the parameters of the model which defines income as normal (rather than current)

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[1] The median number of years of school completed for the employed civilian labor force by occupation are summarized below for the years 1970 and 1976:

Occupation	Median years 1970	Median years 1976
Professional and managerial	14.9	16.0
Clerical and sales	12.6	12.7
Craft and kindred	12.1	12.4
Operatives	11.6	12.1
Laborers (nonfarm)	10.5	12.0
Service workers	11.7	12.1

and which assumes that marginal budget shares are invariant with respect to normal income changes.[1]

Estimates of the number of jobs created onsite and directly and indirectly are disaggregated into 15 earnings classes and 23 regions in order to generate estimates of induced employment effects. These induced effects arise from second-round expenditures resulting from the incremental earnings generated by onsite and direct and indirect employment effects. These expenditures are assumed to be a function of family income. In order to project the distribution of incremental earnings bv family income class, the G-H model first estimates the size distribution of incremental earnings by individual earnings class, and then maps changes in the distribution of earnings into changes in the distribution of disposable family income.[2]

Accounting for the Effects of Fiscal Substitution. In principle, funds for public job-creation should be used to provide additional public services. In practice, however, this objective can be subverted by substituting these funds for local funds to provide the same amount of services as would have been provided even if there had been no public job-creation program. This type of subversion has been labeled "fiscal substitution." Existing evidence suggests that such substitution may have been quite large in such public job-creation programs as PEP and earlier versions of CETA.[1] However, many speculate that substitution may be less prevalent under the current CETA program, with its increased emphasis in targeting on projects.[2]

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[1] The latter assumption is equivalent to assuming that the income elasticity of demand is one for all commodities. Hence, this model will bias upward (downward) expenditures on commodities with low (high) elasticities of demand with respect to normal income. Golladay and Haveman, pp. 31-38.

[2] To accomplish these tasks, the model uses a relative frequency distribution of 114 occupations in 23 regions by 15 earnings classes. This distribution is derived from the 1970 Census 1 in 100 sample tapes. Incremental earnings are first allocated to households by assuming that new earnings accrue to households with members employed in the affected occupations. Income is mapped to earnings by assuming that income distributions for workers with new jobs and earnings distributions for all workers within occupations are the same, implying that income accruing to holders of new jobs will be the mean income of workers in that occupation in 1970. See Golladay and Haveman (1977), pp. 44-45, and Appendix J for further details.

The long-run implication of fiscal substitution for our estimates of job-creation is difficult to pin down without knowing how the local funds freed by fiscal substitution are eventually utilized. In principle, they can be used to fund other public services, to reduce taxes, or to reduce debt (or build up surplus) in the local budget.

If the funds are ultimately spent--directly on other services, or by taxpayers who, by virtue of local tax reductions, have more after-tax income available for spending--then, it is likely that the number of offsite jobs created will be larger and the number of onsite jobs will be smaller than they would have been if there had been no substitution.[3] Since onsite and offsite job-creation effects change in offsetting ways in the face of substitution, total job-creation may not differ substantially from what would have occurred had there been no substitution. However, the distribution of these jobs by occupation and/or education may differ from what would have been obtained in the absence of such substitution.[1]

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[1] Estimates of the rate of fiscal substitution range from 20 to 100 percent. However, they are neither precise nor robust in the face of alternative assumptions. Fechter (1975), National Planning Association, Wiseman, Johnson, and Tomola. For a critical review of these estimates, see Hamermesh and Borus. For a detailed summary of this literature, see Fechter (1978).

[2] A recent study suggests that the rate may be as low as eight percent on projects and twenty percent on other activities (Nathan, et al.). However, there are reasons to suspect that these estimates are biased substantially downward.

[3] Obviously, the greater the rate of fiscal substitution, the smaller will be the number of new jobs created onsite as a result of the program. In the extreme, complete fiscal substitution (a rate of 100 percent) will mean that no new onsite jobs are created. Instead, the funding burden of existing onsite jobs is shifted from local to federal sources. If the freed funds are spent for other public services, then both the number of offsite jobs created directly and indirectly and (as a result) the number of offsite jobs created through induced second-round expenditure effects will be larger. If the freed funds are used to reduce taxes, then, while the number of the offsite jobs created directly and indirectly will be smaller, the number induced by second-round expenditures by taxpayers will be larger.

Since it is difficult to specify exactly what the effects of fiscal substitution might be without further research into the fiscal behavior of recipients of these job-creation funds, a task beyond the scope of this study, we simply offer a range of possible effects. The largest possible effect assumes that none of the resources freed as a consequence are spent--rather, they are used to build up budget surpluses. Under this assumption, our estimates of all relative employment effects (i.e., onsite, direct and indirect, and induced) are reduced by an amount equal to the rate of substitution. The smallest possible effect assumes that all of the freed resources are spent, either as a result of reduced local taxes or increased expenditures on other services, and that the distribution of these expenditures is exactly the same as would have occurred had there been no substitution. Under this assumption, our estimates of all employment effects are the same as those generated under the assumption of no substitution. Existing evidence suggests that the former assumption (which we label the "pessimistic assumption") may be more realistic for estimating short-run employment effects[2] while the latter assumption (which we label the "optimistic assumption") may be more realistic in estimating long-run effects.

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[1] The differences would arise if local taxpayers differ significantly in their consumption behavior from federal taxpayers. This behavioral difference might imply an altered distribution of induced expenditures by industry and region and, to the extent that there are industrial and regional differences in skills, consequent differences in the skill mix of the induced employment effects.

[2] This assumption will be most tenable when the job-creation funds come as a surprise to local officials, so that they do not have the opportunity to build them into their budgets. Such anticipatory budgeting is only possible when local officials know well enough in advance that they can expect these funds so that they can reshuffle some of their own funds to other uses. We have found one study of fiscal behavior (Gramlich and Galper) the findings of which suggest that most freed funds are not spent as long as one year after they are received.

At the time we were ready for this analysis, only 114 of 115 projects for which onsite employment estimates were generated in Chapter II were available. Our estimates of onsite employment are, therefore, not strictly comparable with those reported in Chapter II on this account.[1] In addition, revisions were made in onsite employment estimates for some projects subsequent to this analysis that were incorporated into Chapter II, but could not be incorporated into this analysis. Our estimates are, therefore, not strictly comparable to those reported in Chapter II on this account also.[2] The onsite employment and cost estimates used for this analysis are roughly ten percent lower than those reported in Chapter II.[3] Thus, as a rough guess, we might suggest that the estimates of offsite and total job-creation reported in this Chapter are biased downward by a roughly equal relative amount.

Allocating Nonlabor Project Expenditures Among Industries

In order to be able to estimate the direct and indirect employment effects of these projects/activities, we first had to allocate their nonlabor purchases to specific industries. We used several studies to allocate nonlabor project expenditures to industries [Stern (1975), Vernez, et al. (1977), and BLS (1975)]. From these studies, we were able to estimate for each type of project

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[1] Project 1606, which required 13,000 onsite jobs was not included in this analysis.

[2] The following revisions were made:

	Estimates		
Project	Initial	Revised	Difference
0300	18,000	50,000	32,000
1004	1,504	18,000	16,496
0426	16,000	160,000	144,000

[3] Chapter II reports 3.001 million onsite jobs; the analysis in this Chapter is based on 2.741 million jobs, a difference of 0.260 million of which 0.192 million are accounted for above.

the percentage of expenditures for supplies, equipment, and materials used to purchase products from each of 79 industrial sectors. From the Stern study, we used nonlabor expenditures for functional activities. The Vernez, et al., study provided data for 22 public projects.[1] The BLS study provided estimates of direct requirements per dollar of gross output for 129 industrial sectors. These were used to allocate expenditures for projects that functioned and produced services and materials similar to any of these sectors. By using findings from these three studies, we were able to allocate expenditures for 89 of the 114 projects. The remaining 26 projects had their expenditures allocated on a judgmental basis.[2] The process of matching projects to studies was based on expected similarities between the projects and programs studied by BLS, Vernez, and Stern and our projects. The projects were judged to be similar if: (1) their basic program objectives and/or functions coincided; (2) the types of supplies, materials, and equipment necessary for the execution of the program onsite could be assumed to be analogous or similar.

A detailed description of projects and the corresponding studies used to allocate nonlabor expenditure may be found in Jones. In both the BLS study and the Stern study, the coefficients used to construct our expenditure distribution were based on the structure of the U.S. industrial economy in 1963. The data in the Vernez, et al. study are based on a variety of BLS surveys taken during the period 1960-1969.

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[1] The public works projects are:

1) private one-family housing
2) public housing
3) schools
4) hospitals
5) nursing homes
6) college housing
7) federal office building
8) highways
9) sewer lines
10) sewer plants
11) large earthfill dams
12) small earthfill dams
13) local flood protection
14) pile dikes
15) levees
16) revetments
17) powerhouse construction
18) medium concrete dams
19) lock and concrete dams
20) large multiple-purpose projects
21) dredging
22) miscellaneous civil works

(See Jones for details on the type of data provided by this study for distributing nonlabor costs.)

[2] See Appendix IVA for a summary of projects by study used to allocate nonlabor expenditures.

Estimation of Rates of Substitution

As noted earlier, estimates of fiscal substitution averaged over all local government activity are quite imprecise, ranging from 20 to 100 percent. Our knowledge about this form of behavior is even more ambiguous at the activity level. Lacking firm estimates, we have developed crude procedures for developing reasonable "guesstimates" of the rate of fiscal substitution by project in order to examine--albeit in a very unscientific way--plausible sensitivity of our estimates of job-creation to alternative assumptions about this rate.

We assumed that no activity experienced either absolutely no substitution or complete substitution. Instead, activities were characterized according to whether the rate of substitution was "low," "medium," or "high." The rate of substitution associated with these characteristics were:

low:	25 percent
medium:	50 percent
high:	75 percent

The estimated rates of substitution were developed according to the following characteristics: (1) whether the activity was relatively new (as opposed to a continuation or expansion of existing activity), and (2) the scale of any ongoing activity. Other things equal, substitution was hypothesized to be smaller for new activities and smaller activities.[1] Table 4.1 summarizes these rates by program area. Rates of substitution vary considerably among program areas, ranging from a high of .75 for Fire Protection and Prevention and Parks and Recreation to a low of .25 for Energy Conservation, Housing, and Private-Sector Oriented Activities. Rates by activity are described in Appendix 4B.

Defining Activity Clusters

Ideally, we would like to estimate the employment effects of each of the 114 activities separately; however, the cost of estimating these for each were prohibitive. Therefore, we grouped activities into "clusters." The criteria adopted for grouping were structural characteristics of the individual

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[1] For example, the rate of substitution for projects providing staff support for public service activities that are already ongoing and operating at a realtively high level, such as law enforcement and public education, were assumed to be quite high. Project 0221, Staff Support for Law Enforcement Agencies, Police and Sheriff Departments, Including Dispatch Operators, Commercial Security Aides, Field Aides, etc., which provided an estimated 168,000 onsite jobs, and Project 0421, Staff Support to Expand the Number of Teachers to Achieve a Lower Student-Teacher Ratio, which provides an estimated 363,500 jobs, were both assumed to experience rates of substitution of 75 percent. In other words, only 25 percent of the 531,500 jobs provided by these projects, 132,875 jobs, were assumed to be new jobs; the remainder were assumed to be jobs that would have been supported by local money even in the absence of a public job-cration program.

On the other hand, projects providing new services or tending to expand existing activities engaged in at relatively low levels, such as energy conservation or environmental projects, were assumed to have relatively low rates of substitution. Project 0501, Home Related Construction Activities (i.e., Insulation, Winterization, and Weatherization), providing an estimated 28,000 jobs, and Project 601, Labor Intensive Recycling Systems for Glass, Paper, Aluminum, and Other Materials, providing an estimated 25,000 jobs, were both assumed to experience rates of substitution of 25 percent. In other words, 75 percent of the 53,000 jobs provided by these projects, 39,730 jobs, were assumed to be new jobs; the remainder were assumed to be jobs that would have been supported by local funds even in the absence of public job-creation program.

TABLE 4.1

RATE OF SUBSTITUTION BY PROGRAM AREA

Program Area	Substitution Rate
Community Development	.71
Criminal Justice	.71
Cultural Activities	.50
Education	.46
Energy Conservation	.25
Environmental Programs	.43
Federal Government	.26
Fire Protection and Prevention	.75
Health Care	.72
Housing	.25
Local Goverment Supported Buildings and Public Works	.50
Parks and Recreation	.75
Private (for Profit) Sector Oriented Activities	.25
Social Services for Children and Youth	.31
Social Services for the Elderly and Mentally or Physically Handicapped	.50
Social Services - General	.62

activities. These were: (1) the distribution of expenditures for materials, supplies, and equipment by industry; (2) labor intensity; and (3) skill requirements.

The stratification process is displayed in Chart 4.1. Three major clusters were constructed under the a priori constraint that there should be no more than three major clusters.[1] We used the distribution of the expenditures for materials, supplies, and equipment by industrial sector as the major criterion for defining the three major clusters. The use of this distribution as a clustering criterion enhances our ability to describe the nature of the services provided by the activities within a cluster. We were able to ascribe qualitative descriptions of the clusters on the basis of activity mix and common objectives and services within clusters (as will be seen later in this section).

The labor intensity criterion was adopted because we expected to get significantly different employment effects from activities classified by this characteristic. Whether or not to target on labor intensive activities is a critical policy issue. It is, therefore, important that policymakers have some idea of the differences in overall employment effects between these and nonlabor intensive activities.

Skill requirement is the third criterion for stratification. By adopting this criterion, we hope to provide policymakers with information on relative employment effects of low-skill activities.

Table 4.2 shows the three major clusters with a categorical breakdown of the number of activities by type of service delivered. This criterion

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[1] This restriction was developed, in part, because of budgetary constraints. Ideally, we would have preferred to undertake this analysis at a more disaggregate level.

CHART 4.1

THE HIERARCHICAL CLASSIFICATION OF CLUSTERS

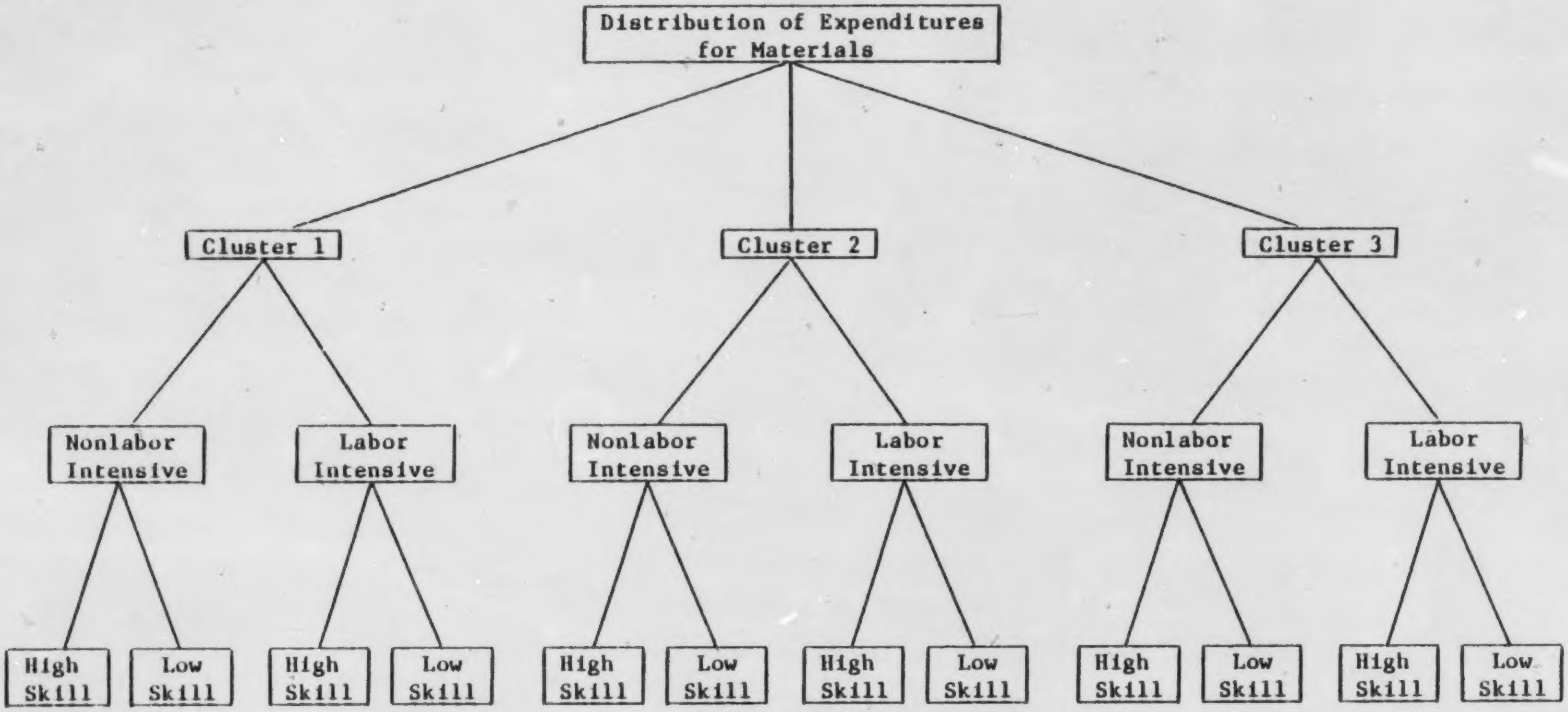
Distribution of Expenditures for Materials
Cluster 1
Cluster 2
Cluster 3
Nonlabor Intensive
Labor Intensive
Nonlabor Intensive
Labor Intensive
Nonlabor Intensive
Labor Intensive
High Skill
Low Skill
High Skill
Low Skill
High Skill
Low Skill
High Skill
Low Skill
High Skill
Low Skill
High Skill
Low Skill

TABLE 4.2

TYPE OF SERVICES RENDERED

		No. of Activities
Cluster 1 -- Staff Support & Educational Services		51
Educational Services		13
Office Supplies for Staff Support		28
Police and Guard Protection Services		3
Social Services		4
Health Services		3
Cluster 2 -- Building and Heavy Construction		38
Office Building Construction	Building Construction	18
Public Housing Construction		1
Highway Construction		7
Sewer Line and Plant Construction		7
Large Multiple Purpose Projects		1
Dams, Levees, Dikes, Flood Control Structures	Heavy Construction	1
Dredging		1
Powerhouse Construction		1
Local Flood Protection		1
Cluster 3 -- Maintenance and Repair Construction		26
Maintenance and Repair Construction		15
Material Handling Machinery Equipment		1
Apparel		2
Motor Vehicle Equipment		4
Miscellaneous Manufacturing		1
Food & Kindred Products		2
Health Services		1

for clustering is quite crude, even though we are able to salvage some quasi-descriptive names for these three major clusters.

Cluster 1 may clearly be described or interpreted as a public services cluster with the basic objective of the delivery of educational, social, health, and protective services to the public. We call this cluster the "staff support-educational services" cluster. Cluster 2 may best be described as a set of public works projects which consist of heavy and building construction projects; therefore, we label this cluster the "public works" cluster or the "building and heavy construction" cluster. Cluster 3 is best described as a residual set of activities whose allocation formulas are assigned on the basis of what we believe to be the more important supplying industries. Most are concentrated in maintenance and repair construction industries.

Given the three major clusters, we further stratified by labor intensity and skill requirement. Table 4.3 shows the resulting twelve clusters generated by this stratification scheme. An activity that required more than 50 percent of its onsite jobs to be filled by unskilled laborers or service workers was defined as low-skill. A labor-intensive activity was defined as one with at least 20 percent of its total wage bill spent for materials, supplies, and equipment. A more detailed description of the resulting clusters is given in Appendix 4C and in Jones.

Findings

As noted earlier in this Chapter, the net employment effects of these job-creation projects/activities will depend on: the size of the offsite (i.e., direct, indirect, and induced) employment effect and the rate of substitution. Table 4.4 summarizes our findings according to the labor intensity and the skill intensity of the clusters. Details appear in Appendix 4D.

TABLE 4.3

NUMBER OF ACTIVITIES BY TYPE OF CLUSTER

	Labor Intensive	Nonlabor Intensive	Total
Cluster 1	48	3	[51]
High-Skill Level	22	3	25
Low-Skill Level	26	0	26
Cluster 2	0	38	[38]
High-Skill Level	0	24	24
Low-Skill Level	0	14	14
Cluster 3	12	14	[26]
High-Skill Level	2	5	7
Low-Skill Level	10	9	19

TABLE 4.4

SUMMARY OF TOTAL EMPLOYMENT EFFECTS AND DETERMINANTS OF THESE EFFECTS BY TYPE OF CLUSTER

	Number of Jobs Created		Ratio (R), Offsite to Onsite Jobs	Rate of Substitution	Net Jobs Created	
	Onsite (1)	Offsite (2)	(3)	(4)	Optimistic Assumption (5)	Pessimistic Assumption (6)
All Clusters	2,741	4,631	1.69	.52	7,372	3,539
Labor Intensive	1,856	1,344	0.72	.54	3,200	1,474
Low-Skill	725	794	1.10	.57	1,519	653
High-Skill	1,131	549	.49	.51	1,680	821
Nonlabor Intensive	885	3,290	3.72	.49	4,175	2,160
Low-Skill	372	608	1.63	.45	980	539
High-Skill	513	2,682	5.23	.51	3,195	1,614

Source: Jones

Note: Totals may not add because of rounding error.

Onsite employment is presented in column (1). This statistic is derived from the data on activities summarized in Chapter II and represents the number of jobs that would be created onsite in the absence of fiscal substitution. Similarly, the offsite (i.e., direct, indirect, and induced) employment summarized in column (2) represents the number of jobs that would be created offsite by these clusters in the absence of fiscal substitution.[1] The ratio of offsite to onsite jobs (R) summarized in column (3) indexes the employment creation potential of these clusters in the absence of substitution. From this column, it is apparent that the employment creation potential of an onsite slot varies systematically among clusters. Other things equal, this potential is higher for nonlabor-intensive clusters and, for given labor intensity, for high-skill clusters. The job-creation potential of onsite jobs in nonlabor-intensive, high-skill projects is particularly striking; each onsite job created is capable of generating an additional 5.23 jobs offsite. This is somewhat higher than similar employment estimates derived by other studies for similar types of projects.[2] Column (4) summarizes rates of fiscal substitution among the clusters. Examination of this column reveals that our estimate of substitution is 52 percent when averaged over all clusters; it ranges from a low of 45 percent for low-skill, nonlabor-intensive clusters to a high of 57 percent for low-skill labor-intensive clusters.

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[1] It is interesting to note the systematic way in which the offsite jobs are distributed among clusters. (Appendix IVD.) Over ninety percent of the offsite jobs for clusters that are labor intensive are induced (rather than direct and indirect). The comparable figure for clusters that are not labor intensive is slightly more than forty percent. This is not surprising, considering that direct and indirect employment effects arise from expenditures on nonlabor inputs.

[2] Vernez, et al., report employment multipliers ranging between 3.7 and 4.0 for three particular types of public works projects--sewer plants, flood protection, and federal office buildings. Vernez, et al., pp. 157-162.

The total job-creation potential estimated under the most optimistic assumption (i.e., either that there is no fiscal substitution or, if there is fiscal substitution; that the freed local funds are ultimately spent through tax cuts or expenditures on other activities) is produced for each cluster by multiplying column (1), onsite job-creation, by (1 + R). This number is summarized in column (5).

Under this scenario, we estimate that a total of 7.3 million jobs can ultimately be created by the 114 activities used in this analysis (column 5). Of these, the largest number, 3.2 million, will ultimately be created by labor-intensive, high-skill projects even though they produce the next-to-lowest number of onsite jobs. This reflects the unusually large value of R found for this cluster. Labor-intensive activities that use low skills are of particular interest to policy analysts because of the increased targeting emphasis given to low-skill workers in public job-creation programs recently. They ultimately produce 2.5 million jobs.

Total job-creation potential estimated under the most pessimistic assumption (i.e., that there is substitution and that the local funds that are released do not get spent) is summarized in column (6). This number is derived by multiplying column (5), the total job-creation estimate under the most optimistic assumption, by column (4), the rate of fiscal substitution.[1] By adjusting for fiscal substitution, we find that, even under the most pessimistic assumption, total job-creation will reach 3.5 million. Of this number, approximately 1.2 million jobs will be created by clusters containing projects that primarily use low-skill workers.

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[1] In using this method of adjusting our employment figures for substitution, we are implicitly assuming that labor and nonlabor inputs are reduced equiproportionately and that average wages do not vary much among clusters. The latter assumption is most questionable, particularly for clusters classified by skill requirements. High-skill projects will have higher average wages than low-skill projects. Thus, this method probably overstates employment potential for high-skill projects and understates it for low-skill projects.

Given our estimate of the total number of jobs created under alternative assumptions about the impact of fiscal substitution, we can derive estimates of the average costs of job-creation (i.e., the cost per job created) for each cluster. These average costs are summarized in Table 4.5. The cost averaged over all clusters ranges between $5,800 and $12,100 per job created, depending on the assumption made about the impact of fiscal substitution. These costs are about 15 to 30 percent higher for labor-intensive clusters than for clusters that are not labor intensive. The cluster that produces jobs at the highest cost is the labor-intensive cluster using high skills. Average costs of job-creation by activities in this cluster range from $8,000 to $16,500.

Table 4.6 summarizes the occupational distribution of the jobs created by these 114 projects. The distributions are presented for all jobs and separately for onsite and offsite jobs. Offsite jobs are further disaggregated into offsite jobs created by direct and indirect expenditure effects and offsite jobs created by induced expenditure effects.

We find that 18.2 percent of the jobs created both onsite and offsite are professional jobs, 17.5 percent are service jobs, 15.9 percent are jobs for operatives, 13.8 percent are clerical, and 12.8 percent are crafts jobs. Only one-fourth of the combined onsite and offsite jobs can be filled by the relatively low-skill laborers and service workers.

There is a notable difference between onsite and offsite jobs in how they are distributed by occupation. Almost one-third of the onsite jobs, but only ten percent of the offsite jobs, are professional jobs. Similarly, almost thirty percent of the onsite jobs, but only ten percent of the offsite jobs,

TABLE 4.5

ESTIMATED COST PER JOB CREATED BY TYPE OF CLUSTER

	Total Costs (in billions of dollars)	Number of Jobs Created (in thousands)		Cost per Job Created	
		Optimistic Assumption	Pessimistic Assumption	Optimistic Assumption	Pessimistic Assumption
All Clusters	42,830	7,372	3,539	5,810	12,102
Labor Intensive	19,932	3,200	1,474	6,229	13,522
Low-Skill	6,409	1,519	653	4,219	9,815
High-Skill	13,523	1,680	821	8,049	16,471
Nonlabor Intensive	22,898	4,175	2,150	5,482	10,650
Low-Skill	5,541	980	539	5,654	10,280
High-Skill	17,357	3,195	1,614	5,433	10,754

Sources:

Total costs: Rubenstein, Appendix C
Jobs created: Supra, Table 4.4

Note: Totals may not add because of rounding error.

TABLE 4.6

DISTRIBUTION OF JOBS CREATED BY OCCUPATION AND SOURCE OF JOB-CREATION
(in percent)

	Onsite	Offsite			Onsite Plus Offsite
		Total	Direct and Indirect	Induced	
Total	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred	30.5	10.3	7.1	12.7	17.8
Managers, officials, and proprietors	1.9	12.4	13.0	11.9	8.5
Sales	0	9.5	10.6	8.6	6.0
Clerical and kindred	6.4	17.9	16.4	19.0	13.8
Craftsmen, foremen, and kindred	13.4	12.2	15.7	9.6	12.8
Operatives and kindred	4.1	21.4	23.9	19.5	15.0
Laborers	16.2	4.2	5.3	3.3	8.7
Service workers	27.5	10.8	7.7	13.2	17.0
Farmers	0	1.4	0.2	2.2	0.9

Source: Appendix IVE

are for service workers. Low-skill occupations (i.e., laborers and service workers) comprise over 40 percent of the onsite jobs, but only fifteen percent of the offsite jobs. Given the difference, it can be concluded that inferences about targeting cannot necessarily be drawn from information about onsite skill distributions.

Table 4.7 summarizes the educational distribution of the jobs created by these activities. The distributions are again presented for all jobs and separately for onsite and offsite jobs. Offsite jobs are again further disaggregated into offsite jobs created by direct and indirect expenditure effects and offsite jobs created by induced expenditure effects.

Since the education distributions are derived from the occupation distributions, it is not surprising that our findings are similar to those summarized above for the occupational distribution.[1] We find that 36 percent of the jobs created both onsite and offsite can be filled both by workers who have not completed high school (hereafter referred to as "high school dropouts"), 35 percent by high school graduates, and 28 percent of the jobs require at least some post-high school education.

There is again a notable difference between onsite and offsite jobs in how they are distributed by education. Fully 39 percent of the onsite jobs, but only 36 percent of the offsite jobs can be filled by high school dropouts; 30 percent of the onsite jobs, and 39 percent of the offsite jobs can be filled by high school graduates; and 31 percent of the onsite jobs, but only 25 percent of the offsite jobs require workers with some post-high school education. Again, given these differences, inferences about targeting effectiveness cannot necessarily be drawn from information about onsite education distributions.

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[1] Appendix IVF contains the distribution of education by occupation used to generate the education distributions summarized in Table 4.7.

TABLE 4.7

DISTRIBUTION OF JOBS CREATED BY EDUCATION AND SOURCE OF JOB-CREATION

Years of School Completed	Onsite	Offsite			Onsite Plus Offsite
		Total	Direct and Indirect	Induced	
Less than or equal to 8 years	18.2	15.1	15.7	14.8	15.9
9-11 years	20.9	20.6	21.2	20.1	20.5
12 years	29.9	39.0	40.0	38.4	35.5
13-15 years	12.6	13.8	13.4	14.1	13.5
16 years or more	18.3	11.5	9.9	12.6	14.6

Source: Appendices IVF, IVG.

Summary

To estimate the total job-creation potential of the 115 projects discussed in Chapter II, we had to augment onsite employment with jobs created offsite through purchases of nonlabor materials and through second-round effects induced by further consumption expenditures by those employed (both onsite and offsite) as a result of the total expenditure on the job-creation programs. We also had to adjust the job-creation estimates for the possible effects of fiscal substitution. We were able to make these two sets of adjustments for 114 of the 115 activities identified in Chapter II.

Offsite effects were estimated using sequential simulation model based on a set of input-output modules developed by Golladay and Haveman. The total job-creation estimates were classified alternatively by occupation and by education in order to assess potential skill imbalances that might arise from implementation of these activities.

We allocated the nonwage costs of each activity among industrial sectors (in order to derive offsite job-creation estimates) and we made crude activity-by-activity estimates of the rate of fiscal substitution.

The 114 activities were aggregated into nine clusters, classified according to the industrial distribution of nonwage expenditures, labor intensity, and skill intensity of the projects. The analysis in this Chapter focused on the labor intensity and the skill intensity dimensions of the clusters. Total employment effects were generated under two alternative assumptions about the impact of fiscal substitution: (1) that there was either no fiscal substitution, or if there was, that the resources freed by fiscal substitution were spent (through tax cuts or other public expenditures) as they would have been if there had been no substitution; and (2) that there is fiscal substitution and the freed resources are not spent. The former assumption was dubbed the "optimistic assumption" and the latter the "pessimistic assumption." Our findings are as follows:

- Depending on assumptions made about the impact of fiscal substitution, total job-creation (both onsite and offsite) from the 114 projects used in this analysis can range from 3.5 million to 7.3 million jobs. Of these, roughly 2.2 million to 4.6 million would be offsite jobs.

- The cost per job created ranges from $5,800 to $12,100 depending on the assumptions made about the impact of substitution. These costs are about 15 to 30 percent higher for labor-intensive clusters.

- Employment multipliers average 1.69, suggesting that 169 total jobs can be created for every 100 new onsite jobs. This multiplier varies substantially among clusters, ranging from a low of 0.5 for labor-intensive, high-skill clusters, such as staff support in the education and criminal justice areas, to a high of 5.23 for nonlabor-intensive, high-skill clusters, such as public works.

- The rate of substitution assumed for all clusters was 0.52. It ranged from a low of 0.45 for nonlabor-intensive low-skill clusters to a high of 0.57 for labor-intensive, low-skill clusters.

- Activities utilizing relatively large amounts of low-skill labor were able to provide 1.2 million to 2.5 million onsite and offsite jobs.

- About one-fourth of the jobs created by all activities could be filled by low-skill labor (i.e., laborers and service workers). However, the skill distribution of these jobs, measured in terms of occupation, differs between jobs created onsite and jobs created offsite. About two-fifth of the onsite jobs, but only 15 percent of the offsite jobs can be filled by low-skill labor.

- The skill distribution of these jobs, measured in terms of education, does not differ quite so dramatically. Approximately 35 percent of the jobs created both onsite and offsite can be filled by workers who did not complete high school. However, there is a notable difference between onsite and offsite distributions in percentage requiring completion of high school. Only 30 percent of the onsite jobs, but over 39 percent of the offsite jobs, required completion of 12 years of schooling.

V. THE SUPPLY OF SKILLS AVAILABLE FOR NEWLY-CREATED PUBLIC JOBS

Introduction

The feasibility of public job-creation programs depends in part on whether the skills required by the jobs created match the skills available from the target groups at which these programs are aimed. The potential for rapid job-creation without extensive training becomes less feasible when skills required exceed skills available. Under these conditions of excess demand, upward pressure may be exerted on wage rates that may ultimately result in upward pressure on prices. This type of inflationary impact would constitute an additional cost of a public job-creation program that could reduce its feasibility. Chapter IV described methods and findings from our analysis of skills required by the projects/activities identified. This Chapter summarizes findings from our study of skills available.[1]

Estimates of skill availability are presented in the form of the size of alternative target groups for job-creation programs. In the case of the unemployed, the numbers in these target groups are further translated into full-year-equivalents of jobs required to meet their employment needs on the basis of estimates of duration of unemployment to make them comparable to the estimates of job-creation displayed in Chapter IV. Lacking such information for other target groups, we cannot present similar estimates of job-creation demand for them without making arbitrary assumptions. To develop such estimates, we arbitrarily assume that one job will be necessary for each two members of these other target groups.

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[1] More details about methods and findings discussed in this Chapter may be found in Thorpe, 1978.

Scope and Methods

The characteristics of the workers to be placed in these jobs depends critically on the type of targeting envisioned for the public job-creation program. Examination of the recent history of such programs reveals a schizophrenic policy in which the emphasis has shifted back and forth between structural and countercyclical objectives.[1] Recent changes in the CETA legislation and new policy initiatives, in the form of the jobs component of the Program for Better Jobs and Income, the Carter Administration's welfare reform package, have shifted the existing (and proposed) job-creation programs, reducing the emphasis on countercyclical objectives and strengthening their structural objectives (Fechter, 1978).

To distinguish between structural and countercyclical programs, we present estimates under alternative aggregate demand assumptions, approximated by aggregate unemployment rates. The structural scenario is represented by the year 1973, when the unemployment rate was 4.9 percent. The countercyclical scenario is based on the year 1975 when the unemployment rate was 8.5 percent.[2]

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[1] The countercyclical program aims at providing jobs for the unemployed, regardless of skills and labor market handicaps, whereas the structural program aims at providing jobs for those workers who, regardless of employment status, are believed to have significant and severe labor market handicaps because of their lack of skills.

[2] The nearest peak of the business cycle for the period was November 1974; the nearest trough was March 1975. Because of resource constraints, we have confined ourselves to only one countercyclical scenario. In principle, alternative scenarios can be estimated for years in which unemployment rates were less than 8.5 percent, but more than 4.9 percent.

We have aged these estimates to 1978 levels[1] to control for trend effects.

We first focus our attention on the unemployed as a target group and present estimates of both the number who are unemployed at any time during the preceding year and the amount of job-creation required to meet their employment needs.[2] Specific estimates are also presented for the long-term unemployed. Our estimate of the long-term unemployed--those who were unemployed for 13 weeks or more, on average--considers a characteristic of unemployment

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[1] Initially, we used age-sex specific population multipliers for 1973 and 1975. However, in our final analysis, we use an average multiplier for each year.

Population Multipliers for Persons
14-65 Years Old in the U.S., from 1973
and 1975 to 1978, by Sex

		1973	1975
Male:	Age		
	14-24 years old	1.067	1.024
	25-44 years old	1.147	1.086
	45-65 years old	1.008	1.007
Female:	Age		
	14-24 years old	1.065	1.024
	25-44 years old	1.138	1.085
	45-65 years old	1.017	1.006

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, N.601, "Projections of the Population of the United States: 1975-2050," U.S. Government Printing Office, Washington, D.C., 1975, Table 7, pp. 41-44. U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 381, "Projections of the Population of the United States by Age and Sex to 2015," U.S. Government Printing Office, Washington, D.C., 1967, Table 8, pp. 70-75.

[2] Estimates of unemployment based on this definition are expected to be larger than estimates based on commonly-used definition of unemployment, which is based on labor market experience in the week preceding the survey, because of the considerable amount of turnover experienced in labor markets during a year. The former estimates are generally three to four times larger than the latter estimates. Since the job-creation under study in this report is aimed in part at meeting the employment needs of members of particular unemployed target groups who experience unemployment, we believe that estimates of jobs required to meet these needs should be based on prior-year estimates of unemployment since they include all persons who experience some unemployment and since they allow us to determine the duration of a completed spell of unemployment.

(duration) that is explicitly incorporated in current public job-creation legislation.[1] The jobs required to meet the employment needs of unemployed workers are also displayed by skill level (proxied by education and occupation).

We then turn our attention to other possible target groups that have been considered, but have not been explicitly incorproated in current public job-creation programs--the "hidden" unemployed[2] and the underemployed.[3] Estimates for these target groups are displayed only in terms of numbers of workers since available data do not permit us to translate these numbers into appropriate job estimates. Estimates of these numbers are also displayed in terms of skill (i.e., education and occupation) in order to give the reader some sense of the types of jobs that will be necessary to meet the employment needs of these target groups. Looking to the future, we then present estimates of the number who would, in 1981, be eligible for, and willing to accept, low-wage jobs under the Carter Administration's Program for Better Jobs and Income.

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[1] The current criteria for eligibility under Title VI of the Comprehensive Employment and Training Act of 1973 (CETA) include individuals who are members of households which have current gross family income (adjusted to an annual basis) that is less than 70 percent of the lower living standard income level, or require that the individual:

(1) has been receiving unemployment compensation for fifteen or more weeks;
(2) is not eligible for such benefits and has been unemployed for fifteen or more weeks;
(3) has exhausted unemployment compensation benefits; or
(4) is part of a family which is receiving aid to families with dependent children.

Lower living standard income level is defined as the income level determined annually by the Secretary based upon the most recent "lower living standard budget" issued by the Bureau of Labor Statistics of the Department of Labor.

[2] The hidden unemployed are defined as workers who report themselves to be out of the labor force, rather than unemployed, but who would be willing to take a job if one were offered to them. This group of workers--frequently referred to as "discouraged workers" because their motivation to leave the labor force stems from poor job prospects--is generally included in principle, if not in practice, in most definitions of target groups for public job-creation programs.

[3] The underemployed are defined as workers who were employed part-time for economic reasons in the week prior to the survey. This group is not mutually exclusive with our previous groups--that is, those who were unemployed for any length of time during the previous year--and could therefore result in an upward bias in our estimate of skill availability. However, the overlap of these two types of workers is small, amounting to a little more than 6 percent in both employment scenarios, implying that the bias is relatively small.

Findings

Table 5.1 summarizes key aspects of our findings: the amount of job-creation required and the sensitivity of this job-creation requirement to labor market conditions for the following selected target groups:

- the unemployed,
- the "hidden" unemployed,
- the underemployed,
- potential welfare reform participants.

Job-creation requirements are expressed, where feasible, in terms of the number of year-round, full-time equivalents to make them consistent with the estimates of jobs created summarized in Chapter IV. Major conclusions that can be drawn from this table are:

- The total unemployed, the single most important target group, numbers from 12.4 to 17.9 million, depending on the rate of unemployment.
- The number of jobs necessary for these workers would range between 2.5 and 4.6 million jobs.
- If targeting is restricted to the long-term unemployed, then the size of the target group shrinks dramatically to a range of 2.4 to 6.0 million workers.
- The number of jobs necessary for these workers would range between 1.3 and 3.1 million jobs, depending on the rate of unemployment.

TABLE 5.1

NUMBER OF WORKERS AND FULL-YEAR-EQUIVALENTS IN SELECTED TARGET GROUPS IN 1978 AT ALTERNATIVE RATES OF UNEMPLOYMENT[a]

	Size of Population[b]		Full-year-equivalents[b]	
	UNEMPLOYMENT RATE EQUALS:		UNEMPLOYMENT RATE EQUALS:	
Target Group	4.9 percent	8.5 percent	4.9 percent	8.5 percent
Unemployed				
All	12.4	17.9	2.5	4.6
Long-term[c]	2.5	6.0	1.2	3.1
"Hidden" Unemployed[d]	1.3	1.6	0.65	0.8
Underemployed[e]	2.8	3.5	1.4.	1.75
Welfare Reform Participants[f]	3.2		1.8	

Notes:
a. Unemployment rates are annual averages of monthly rates, based on 1973 and 1975 experience.
b. In millions.
c. Includes unemployed workers with more than 13 weeks of unemployment in prior year.
d. Defined as workers who are not in the labor force because of poor employment prospects.
e. Defined as part-time employed workers who would like to work full-time.
f. Estimates are for the year 1981 and assume an unemployment rate of 5.6 percent

Source: Thorpe, 1978.

- In addition to the unemployed, we estimate that there are approximately 1.3 to 1.6 million "hidden" unemployed who could constitute a target group for publicly-created jobs.[1]

- We also estimate that there are 2.8 to 3.5 million workers who are involuntarily employed part-time because they are not able to find full-time jobs. These "underemployed" workers could also be a target for publicly-created jobs.

- If we estimate that one public job will have to be created for every two workers classified as "hidden" unemployed or underemployed,[2] then an additional 2.0 to 2.5 million jobs would have to be created to meet the employment needs of these target groups.

- Finally, we estimate, based on Labor Department tabulations,[3] that in 1981 there would be about 3.2 million persons who would be willing to work in approximately 1.8 million publicly-created minimum-wage jobs. These persons would constitute the target group for publicly-created jobs under the Program for Better Jobs and Income.

Table 5.2 summarizes characteristics of a "structural" program. We have arbitrarily defined these characteristics as the amount of public job-creation required and the characteristics of the target groups at an unemployment rate of 4.9 percent.[4] Such a program would have the following characteristics:

- It would have to create 2.5 million jobs for 12.4 million unemployed workers, if all unemployed were considered the target group.

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[1] This estimate is slightly higher than comparable estimates derived from the Consumer Population Survey and published by the Bureau of Labor Statistics. The BLS estimate was 0.7 million in 1973 and 1.1 million in 1975—roughly 30 to 50 percent below our estimate. The difference can be attributed to differences in methods used to derive the estimates. BLS bases its estimate on a response to a survey question. Our estimate is based on the parameters of an econometric model. See Thorpe, 1978, for further details.

[2] This estimate assumes: (a) the hidden unemployed have about the same duration of unemployment as the long-term unemployed (i.e., 37.5 weeks); and (b) the underemployed work an average half-time (20 hours per week) for 52 weeks but would like to work full-time (40 hours per week). The job-creation requirement for the underemployed therefore only fills in the gap between their actual work experience and their derived work experience.

[3] We are indebted to Gary Reid, Department of Labor, ASPER for providing us this tabulation.

[4] Existing estimates of the minimum rate of unemployment attainable through macroeconomic measures without causing an intolerable acceleration in the rate of inflation range upward from 4.75, depending on assumptions about the demographic composition of the labor force.

TABLE 5.2

JOB-CREATION REQUIREMENTS AND SKILL CHARACTERISTICS OF SELECTED TARGET GROUPS FOR A STRUCTURAL[a] PUBLIC JOB-CREATION PROGRAM IN 1978

Target Group	Number of Jobs[b]	Number of Workers[b]	Percent High School Dropout	Percent Unskilled[h]	Percent Semiskilled and Skilled[i]	Percent White-Collar[j]	Percent Service Workers
Unemployed							
All	2,483	12,449	39	11	36	33	17
Long-Term[c]	1,238	2,492	40	10	36	34	18
"Hidden" Unemployed[d]	626	1,253	39	11	36	33	17
Underemployed[e,g]	1,416	2,831	47	9	37	25	18
Welfare Reform Participants[f]	1,813	3,237	49	n.a.	n.a.	n.a.	n.a.

Notes

a. Based on unemployment rate of 4.9 percent in 1978.
b. In thousands.
c-f. See notes, Table 5.1.
g. Includes about 6 percent inexperienced workers.
h. Defined as the Census major occupation class, non-farm laborers.
i. Defined as the two Census major occupation classes: operatives, and craft and kindred workers.
j. Defined as the four Census major occupation classes: professional and technical, managers and administrators, sales workers, and clerical workers.
n.a. Not available.

Source: Thorpe, 1978.

- It would have to create only 1.2 million jobs for 2.5 million workers if targeting was focused on the long-term unemployed.
- Assuming one public job would have to be created for every two hidden unemployed or underemployed workers, an additional 2.05 million jobs would have to be created to meet the employment needs of the 4.1 million workers in these target groups.
- Roughly two-fifths of the unemployed and the hidden unemployed would be workers who had not completed high school.
- A slightly larger fraction (one-half) of the underemployed and those who would be willing to accept minimum-wage jobs would be workers who had not completed high school.
- Only one-tenth of the unemployed and 15 percent of the underemployed workers would be unskilled blue-collar laborers.
- Approximately 36 percent of these target groups would be semi-skilled and skilled blue-collar laborers.
- Roughly one-third of the unemployed and one-fourth of the underemployed would be white-collar workers.
- Approximately one-sixth of these target groups would be service workers.

Table 5.3 summarizes characteristics of available supply for a particular countercyclical program--one in which the unemployment rate increases from 4.9 percent to 8.5 percent, a 3.6 percentage point change. Clearly, these characteristics--particularly, the number of additional jobs required and the number of additional workers in the target group--may differ substantially for alternative changes in unemployment rates. The particular countercyclical program summarized would have the following characteristics:

- It would have to create an additional 2.1 million jobs for an additional 5.5 million unemployed workers if all unemployed were considered the target group.
- It would have to create an additional 1.8 million jobs for an additional 3.6 million workers if targeting was focused only in the long-term unemployed.

TABLE 5.3

JOB-CREATION REQUIREMENTS AND SKILL CHARACTERISTICS OF SELECTED TARGET GROUPS FOR A COUNTERCYCLICAL[a] PUBLIC JOB-CREATION PROGRAM IN 1978

Target Group	Number of Additional Jobs[b]	Number of Additional Workers[b]	Percent High School Dropout	Percent Unskilled[g]	Percent Semiskilled and Skilled[h]	Percent White-Collar[i]	Percent Service Workers
Unemployed							
All	2.1	5.6	32	7	50	27	14
Long-Term[c]	1.8	3.6	37	10	50	27	11
"Hidden" Unemployed[d]	0.15	0.3	29	5	55	25	13
Underemployed[e,f]	0.35	0.7	31	9	12	23	38

Notes

a. Based on unemployment rate from 4.9 to 8.5 percent.
b. In millions.
c-e. See notes, Table 5.1.
f-i. See notes g-j, Table 5.2.

Source: Thorpe, 1978.

- Assuming one public job would be necessary for every two hidden unemployed or underemployed workers, 0.5 million more additional jobs would have to be created to meet the countercyclical employment needs of the additional 1.0 million workers in these target groups.

- The educational characteristics--particularly, the percent who did not complete high school--would differ from the structurally employed displayed in Table 5.2; fewer, approximately 30 to 37 percent, would be workers who had not completed high school.

- A slightly smaller proportion of the countercyclical target group would be unskilled blue-collar workers.

- About one-half of the unemployed but only one-eighth of the underemployed would be semi-skilled and skilled blue-collar workers.

- A slightly smaller proportion of the countercyclical unemployed would be white-collar or service workers. However, almost two-fifths of the underemployed would be service workers.

The implications of these estimates of skill availability for the feasibility of large-scale public job-creation are examined in Chapter VI by comparing them to the estimates of the total skill requirements generated by the 114 projects identified earlier.

VI. ASSESSING POTENTIAL SKILL IMBALANCES

The feasibility of large-scale public job-creation depends in an important way on whether or not there will be an adequate supply of workers available to fill the jobs created. Circumstances under which the number of jobs created exceeds this supply can give rise to employment bottlenecks that create upward pressure on wage rates and, ultimately, to similar pressure on prices. The existence of such bottlenecks would require careful selection of projects to be undertaken in order to minimize their potential inflationary effects.

This Chapter assesses the potential for employment bottlenecks. National estimates of "demand" for labor created by the onsite and offsite employment effects discussed in Chapter IV are compared to national estimates of "supply" of labor available from the target groups discussed in Chapter V. Since national estimates are being compared, the findings are not applicable to any particular local area.

The comparisons are broken down by aggregates of project-clusters and target groups, and are presented separately for a structural program that would operate at relatively low rates of unemployment (4.9 percent) and for a combination structural-cyclical program that would operate at higher levels of unemployment (in this case, 8.5 percent). Recall that in Chapter IV we displayed job-creation estimates separately for alternative assumptions about fiscal substitution and its impact. Only estimates for the "optimistic" assumption--that all job-creation funds are ultimately spent are displayed in this Chapter--for ease in exposition and since it is the more reasonable assumption for long-run impact analysis. This assumption produces the largest possible "demand" for labor and, accordingly, will tend to make our findings about feasibility relatively conservative since it is likely to result in a larger number of employment bottlenecks.

Further recall that the estimates of job-creation ("demand" for labor) reported in Chapter IV were made for only 114 of the 233 activity areas identified earlier in Chapter II and are. therefore, biased downward by a substantial amount. This bias will tend to make our findings about feasibility more liberal than they would have been had we been able to estimate the job-creation potential of all 233 activity areas. Employment bottlenecks are less likely to appear for 114 activities than for 233 activities.

Finally, it is difficult to draw inferences about feasibility from occupational comparisons for narrowly-focused target groups. An insufficient "supply" of professionals and managers in a low-skill target group, for example, does not necessarily render a particular project-cluster infeasible since that supply is likely to be available predominantly from outside the target group.

Because of these biases and others implicit in our estimates of "supply" and "demand", and the difficulty in drawing inferences from occupational comparisons for narrowly-focused target groups, the analysis presented in this Chapter should be considered crude and quite tentative.

We find that the 114 activities used to estimate "demand" are capable of generating more than enough jobs to meet the employment needs of any particular target group in a structural-cyclical program and, a fortiori, in a structural program. In both cases, bottlenecks are distributed across all occupations. This suggests that any attempt to implement all of these activities is likely to produce employment bottlenecks; therefore, a judicious selection from among them would be desirable.

We also find that the particular subsets of clusters examined here are suitable for certain target groups. The labor-intensive clusters create a "demand" that roughly balances with the "supply" available from the long-term unemployed for the particular structural-cyclical program examined in this study (i.e., one that would be operating at an unemployment rate of 8.5 percent). It creates roughly 700,000 jobs more than would be necessary to provide jobs for all observed unemployed workers in a structural program. The bottlenecks in this program are in the white-collar occupations--professional-managerial and clerical-sales. Similarly, the low-skill clusters create about 800,000 jobs more than is necessary to provide jobs for all low-skill unemployed workers in the structural-cyclical programs and roughly a sufficient number of jobs necessary to provide work for all observed unemployed in the structural program. Bottlenecks also appear for white-collar workers in this target group, but these can be eliminated if workers in these occupations are drawn from the pool of all observed unemployed. Finally, the low-skill, labor-intensive clusters create enough jobs to provide a rough balance with the "supply" available from the low-skill unemployed in the structural program. Here again, bottlenecks appear for white-collar occupations when "supply" is confined to the low-skill or the long-term unemployed, however, these occupational bottlenecks can again be alleviated by drawing from the larger pool of unemployed workers.

Aggregate Findings

Table 6.1 summarizes our earlier findings. We reported in Chapter IV that, depending on the assumption made about fiscal substitution and the disposition of local funds released by such substitution,[1] anywhere from

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[1] Recall that we defined an "optimistic assumption" as one where there is either no substitution or, if there is, the resources freed are ultimately spent (through tax reductions or other public expenditure) as they would have been had there been no public job-creation program, and a "pessimistic assumption" as one where there is substitution and the freed resources are not spent.

TABLE 6.1

"DEMAND" FOR JOBS BY TYPE OF CLUSTER AND SUBSTITUTION ASSUMPTION AND "SUPPLY" OF WORKERS BY TARGET GROUP AND TYPE OF PROGRAM

"Demand" (in millions)

	Substitution Assumption	
	Optimistic	Pessimistic
Type of Cluster		
All Clusters	7.4	3.5
Labor-intensive	3.2	1.5
Low-skill	2.5	1.2
Low-skill, Labor Intensive	1.5	0.6

"Supply" (in millions)

	Type of Program	
	Structural-cyclical	Structural only
Target Group		
Total, Unemployed and Underemployed	7.1	4.5
All Observed Unemployed	4.6	2.5
Long-term Unemployed	3.1	1.2
All Low-skill Unemployed	1.7	1.0
Low-skill, Long-term Unemployed	1.2	0.5

3.5 million to 7.4 million jobs could be created both onsite and offsite by the 114 projects analyzed. Hereafter, this job-creation will be referred to as "demand." Table 6.1 summarizes this demand for all clusters as well as for particular subsets of clusters--labor-intensive projects, low-skill projects, and labor-intensive, low-skill projects. Demand in the subsets of clusters is considerably lower, ranging from 0.6 to 3.2 million.

We reported in Chapter V that, depending on the level of aggregate demand and the tightness of the targeting, up to 7.1 million jobs would have to be created for the target groups for the program. Hereafter, these job requirements will be referred to as "supply." Supply would be considerably smaller for a structural program (no more than 5.7 million) or for smaller target groups (e.g., 1.3 million to 3.1 million jobs for the long-term unemployed). Estimates of supply (derived from Chapter V) are therefore presented for alternative target groups--low-skill unemployed, long-term unemployed, all unemployed, and all unemployed plus hidden unemployed and underemployed workers--and types of programs: (1) a structural program assumed to operate even during periods of high aggregate demand, and (2) a countercyclical program expected to trigger on when aggregate demand falls from levels considered to be "full employment."[1]

Note again that these estimates of supply assume all members of the target group would apply for the jobs created by the program. The actual application rate will depend on such factors as the wage rate paid by these jobs, work conditions, and expected returns to not applying for these jobs. At present, little is known about the determinants of application rates to public job-creation programs. It is entirely possible that the target groups examined here will understate the actual demand for these jobs since, under the appropriate conditions, the program might induce people who are currently employed in private sector jobs or who are out of the labor force to apply for jobs also.[1]

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[1] The structural estimates assume an unemployment rate of 4.9 percent; the countercyclical program is based on an unemployment rate of 8.5 percent.

We begin our analysis of feasibility by comparing aggregate supply available from alternative target groups to aggregate demand created (both onsite and offsite) by alternative combinations of project-clusters. Looking first at supply for a structural and countercyclical program combined--a program that would require a relatively large number of jobs to meet the employment needs of its target groups--Table 6.2 summarizes our comparisons for an unemployment rate of 8.5 percent, a relatively high rate given the performance of the economy in recent years.[2]

The table contains estimates of the difference between supply for a particular target group and demand created by a particular set of project-clusters. A positive number implies that the project-cluster has not created enough aggregate jobs and a negative number suggests that the project-cluster has created too many aggregate jobs. For this analysis, we assume that a difference of less than 0.5 million can roughly be considered a situation of balance between aggregate demand and aggregate supply.

When all clusters are considered, a balanced program appears attainable for the target group designated total unemployed and underemployed. When the smaller set of labor-intensive clusters are considered, a rough balance is struck when the target group is the long-term unemployed. Low-skill clusters

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[1] For an interesting simulation study of the potential supply of applicants to a low-wage public job-creation program, see Greenberg.

[2] This would appear to be an upper bound on what might be expected in the future. Lower rates of unemployment will probably produce smaller job-requirements and will alter our comparisons accordingly.

TABLE 6.2

ESTIMATED AGGREGATE IMBALANCES[a] FOR ALTERNATIVE TARGET GROUPS BY TYPE OF CLUSTER, STRUCTURAL-CYCLICAL PROGRAM,[b] AND OPTIMISTIC FISCAL SUBSTITUTION ASSUMPTION[c]

	All Clusters	Labor-intensive	Low-skill	Low-skill, Labor-intensive
Total unemployed and underemployed[d]	-0.3	+3.9	+4.6	+5.6
Unemployed only				
All	-2.8	+1.4	+2.1	+3.1
Long-term	-4.3	-0.1	+0.6	+1.6
Low-skill unemployed only				
All	-5.7	-1.5	-0.8	+0.2
Long-term	-6.2	-2.0	-1.3	-0.3

Notes

[a] Imbalance defined as difference between "supply" and "demand." Positive number means excess supply; negative number means excess demand.

[b] Unemployment rate = 8.5%.

[c] All job-creation funds ultimately spent.

[d] Includes hidden unemployed and underemployed.

can also serve the long-term unemployed, but will not be able to create enough jobs for them; an additional 600,000 jobs will be necessary to meet the job-requirements of this target group. Finally, when we narrow our focus to only the low-skill, labor-intensive cluster, a rough balance is only possible for the low-skill unemployed.

Table 6.3 compares aggregate job-requirements and aggregate job-potential for a purely structural program operating at a rate of unemployment of 4.9 percent. When all clusters are considered, the number of jobs created exceeds job-requirements for all target groups. This implies that a structural program would require judicious selection from among the 114 projects used in this analysis in order to create a rough balance between job-requirements and job-creation.

When we narrow our focus to subsets of clusters, we find that it is possible to attain a rough aggregate balance in a structural program for some target groups. Labor-intensive clusters are able to provide 700,000 jobs more than is necessary to balance with the job-requirements of all observed unemployed. A rough balance can be attained when the target group is slightly larger than all observed unemployed and is slightly smaller than total unemployed and underemployed. Low-skill clusters are able to provide enough aggregate jobs for all observed unemployed in a structural program. When we further narrow our focus to the low-skill, labor-intensive clusters, we find that a rough aggregate balance is struck for the long-term unemployed.

Analysis of Tables 6.2 and 6.3 reveals that aggregate bottlenecks, defined as an excess demand, are more likely to occur:

- when more clusters are used to create jobs,
- when target groups are more narrowly defined,
- when a structural program is being considered.

TABLE 6.3

ESTIMATED AGGREGATE IMBALANCES[a] FOR ALTERNATIVE TARGET GROUPS BY TYPE OF CLUSTER, STRUCTURAL PROGRAM,[b] AND OPTIMISTIC FISCAL SUBSTITUTION ASSUMPTION[c]

	All Clusters	Labor-intensive	Low-skill	Low-skill, Labor-intensive
Total unemployed and underemployed[d]	-2.9	+1.3	+2.0	+3.0
Unemployed only				
All	-4.9	-0.7	0	+1.0
Long-term	-6.2	-2.0	-1.3	-0.3
Low-skill unemployed only				
All	-6.4	-2.2	-1.5	-0.5
Long-term	-6.9	-2.7	-2.0	-1.0

Notes

[a] Imbalance defined as difference between "supply" and "demand." Positive number means excess supply; negative number means excess demand.

[b] Unemployment rate = 4.9%.

[c] All job-creation funds ultimately spent.

[d] Includes hidden unemployed and underemployed.

Our analysis of aggregate "supply" and "demand" narrowed the set of feasible combinations of clusters and target groups considerably. Table 6.4 pinpoints these combinations. Out of 40 possible combinations, only six appear to be feasible on the basis of the aggregate "supply" and "demand." Three are concentrated in the low-skill, labor-intensive clusters. Four are relevant to the combined structural-cyclical program. Inspection of Table 6.4 suggests that a basic structural program might be derived from the low-skill, labor-intensive clusters. These could be augmented by other low-skill or labor-intensive clusters to meet the additional requirements for job-creation imposed by the structural-cyclical program.

Analysis by Skill

The preceding section analyzed the differences between aggregate estimates, job-supply, and aggregate job-demand by cluster and target group to determine where there was a rough balance. It found that such an aggregate balance was frequently possible when subsets of clusters were matched with particular target groups. However, while aggregate balance is desirable, it may not be sufficient to make these clusters feasible. A situation of aggregate balance may hide a considerable amount of imbalance when supply and demand for jobs are further disaggregated by skill.

The possibility of such skill imbalances is investigated below. We confine our examination to those six combinations identified in Table 6.4 as feasible on the basis of a rough balance between aggregate supply and aggregate demand. Table 6.5 summarizes our findings.

A general pattern of shortages for white-collar workers--professional-managerial and clerical-sales--and service workers emerges. The most serious imbalance, a shortage of 1.2 million, appears for professional-managerial

TABLE 6.4

SUMMARY OF FEASIBLE COMBINATIONS OF CLUSTER AND TARGET GROUPS FOR ALTERNATIVE JOB-CREATION PROGRAMS

	Type of Cluster			
Type of Program and Target Group	All clusters	Labor Intensive	Low-skill	Low-skill, Labor-intensive
Structural-cyclical				
Total unemployed and underemployed	*			
Unemployed only				
All				
Long-term		*		
Low-skill only				
All				*
Long-term				*
Structural only				
Total unemployed and underemployed				
Unemployed only				
All			*	
Long-term				*
Low-skill only				
All				
Long-term				

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* = Feasible, imbalances less than 0.5 million.

TABLE 6.5

OCCUPATIONAL IMBALANCES[1] FOR FEASIBLE COMBINATION OF CLUSTERS AND TARGET GROUPS

(in millions)

Major Occupation Group	Program-Cluster-Target Group					
	Structural-cyclical Program				Structural Only	
			Low-skill, Labor-intensive			
	All Clusters, Total Unemployed and Underemployed	Labor-intensive Long-term Unemployed	All Low-skill	Long-term Low-skill	Low-skill, All Unemployed	Low-skill, Labor-intensive, Long-term Unemployed
Professional and Managerial	-1.2	-0.8	-0.2	-0.2	+0.1	-0.1
Clerical and Sales	-0.1	+0.1	-0.1	-0.1	+0.1	+0
Crafts	+0.1	+0.2	+0.2	+0.1	+0.1	+0
Operatives	+0.6	+0.6	+0.4	+0.2	+0.2	+0.1
Laborers	+0.1	+0.1	+0	-0	-0.1	-0.1
Service Workers	0	-0.3	-0.2	-0.3	+0.2	-0.3
Farm Workers	+0.2	+0	+0	+0	+0	+0

Notes: 1. "+" denotes excess supply; "-" denotes excess demand.

Source: Appendix VIA.

workers when all clusters are linked with the structural-cyclical program for the total unemployed and underemployed. This shortage is almost offset by excess supplies in all other occupation groups (except clerical-sales). It is possible to alleviate all other shortages appearing for all other combinations by drawing on supplies available outside of the target group. For example, the shortage of 200,000 professional and managerial workers displayed in column (3) for all low-skill unemployed as the target group in the structural-cyclical program can be eliminated by hiring the from the pool of non-low-skill unemployed professional and managerial workers available to the program.

VII. ADMINISTRATIVE AND OPERATIONAL ISSUES

We have argued that the feasibility of large-scale countercyclical public job-creation will depend on: (1) identifying "meaningful" tasks to be accomplished with these jobs and (2) providing adequate resources (wages, capital, high- and low-skill labor, training, and supervision) to accomplish these tasks.

These represent necessary but not sufficient conditions for a public jobs program to provide the means for large-scale expansion of public service or public works activities implemented at the local level. This Chapter discusses a broad range of administrative and operational issues that may serve to limit the potential of creating large numbers of jobs in expanding publicly supported activities.

We present seven major issues and discuss in general terms how each of these may limit the feasibility of large-scale public job-creation. These issues, drawn from the existing literature and from our discussions with officials during our site visits, include:

1. Ambiguous goals.
2. Red tape, lack of technical assistance and poor interagency coordination at the local level.
3. Lack of adequate planning due to short lead time and funding uncertainty.
4. Targeting employment opportunities.
5. Lack of resources for training and supervision, materials, supplies, and equipment
6. Pressure group problems such as private sector or union opposition.
7. Low transition to unsubsidized jobs.

Where possible, we link these issues to programs that might be rendered less feasible because of them.

Ambiguous Goals

The CETA legislation in general and the PSE program in particular have been criticized for having numerous and sometimes conflicting goals. Brandwein in his recent address to the Society of Government Economists listed 17 goals that PSE programs sought to achieve. Wiseman and Katz, in their recent paper for the National Commission for Manpower Policy, stated that local governments were having difficulty in seeking ways to meet the diverse, ambiguous, and conflicting goals of the program. Some of the major goals which PSE is currently addressing include:

- create meaningful jobs for the unemployed in a rapid manner,
- aid to city, county, and state governments to meet public needs,
- provide financial support to activities of limited duration thereby reducing "phase out" problems should the economy pick up and unemployment be reduced signficantly,
- provide needed services that otherwise would be unaffordable,
- provide fiscal relief to distressed areas,
- provide training and job experience sufficient to aid persons in "transitioning" into an unsubsidized job,
- provide "significant segments" of the population (minorities, veterans, women, etc.) with access to employment opportunities they otherwise would not have had,
- provide financial support for private non-profit community organizations providing public services,
- promote effective "citizen participation" in the local decision-making process regarding the utilization of PSE funds by establishment of Manpower Advisory Planning Councils.

Thus, the local, county, and state government and non-profit agencies given responsibility to implement the PSE program are faced with a wide variety of choices seeking to address all the major goals.

This implementation problem does not limit the feasibility of expanding any one specific program activity like housing, day care, or meals programs for the elderly. Rather, it presents a more fundamental problem complicating the administration and decisionmaking processes of the entire public job-creation effort at the local level. The result of these wide ranging goals is that local, county, and state governments pick and choose the goals they wish to pursue and those they wish to ignore. The program, then, becomes a different program in each locality thereby making it difficult to monitor or evaluate either in its present form or in an expanded form. In addition, the ambiguity and diversity of goals renders the program less effective in meeting any one of its goals than it could be with fewer and less often conflicting objectives.

Red Tape

A second implementation issue of general concern regarding PSE programs is red tape and the lack of effective technical assistance provided to local, county, and state governments, and community organizations participating in the program. This problem was the one that surfaced most frequently in our discussions with local officials and community representatives during our field visits.[1] It is especially acute in the PSE program since its rules and regulations have changed often over the past few years. This general issue does not limit the feasibility of expanding any one particular program through PSE, such as expanding energy conservation activities or increasing the number of teacher's aides. However, red-tape related problems could limit the feasiblity of expanding public job-creation programs in several ways. First, the local, county, and state governments (prime sponsors) may not be able to provide the assistance necessary to instruct and aid public service agencies in filling out the necessary application forms, and understanding the proper regulations in reporting their use of job-creation funds. Thus, local agencies (public and private non-profit) may not be willing or able to participate fully in creating jobs for the unemployed due to red-tape related problems. A particular example from our field visits can make the issue more vivid. Administrators of PSE programs in two rural counties visited reported that their inability to provide technical assistance to social service and other agencies under their jurisdiction was the major reason they failed to meet their hiring objectives (Rubenstein, 1978b). To the extent red tape stifles participation in the program, the feasibility of a large-scale expansion of public job-creation efforts is limited. Second, red-tape related problems of the government bureaucracy in general, and the PSE program in particular, make it more difficult for a government agency or non-profit organization to achieve interagency coordination using PSE funds. The need for linking PSE funds with other local government and non-profit program activities in an efficient manner will grow as public job-creation efforts are expanded. Thus, to some extent, the feasiblity of expanding public job-creation efforts could be limited by the variety of implementation problems related to red tape, lack of adequate technical assistance, and the difficulty in achieving effective interagency coordination utilizing public job-creation funds.

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[1] A detailed summary of the findings from these site visits on administrative and implementation issues can be found in Rubenstein (1978b).

Inadequate Environment of Effective Planning

A third general operational issue that may serve to limit the feasibility of a large-scale expansion of public jobs programs is one that has plagued past efforts to create jobs for the unemployed. This problem--the lack of adequate planning due to short leadtime and funding uncertainty--limits the feasibility of a wide variety of activities. Generally speaking, short leadtime limits the feasibility of activities that require sophisticated or long-range planning while the year to year funding of current and previous job-creation programs effectively prohibits the use of PSE funds for activities that are going to require more than one year to implement. For example, short leadtime will limit the usefulness of PSE funds in expanding such activities as the building of physical structures or the carrying out of social service programs for which plans are not already developed. Short leadtime and funding uncertainties also limit a government or non-profit agency from being able to design and implement activities which are large-scale (employ over 50 persons) due to the leadtime required to coordinate such an effort and the problems caused by having to phase out the effort within one year. Thus, we see potential bottlenecks, coordination problems, and poor planning as the almost inevitable results of expanding public job-creation efforts to a large scale while allowing short leadtimes and year to year funding.

Targeting Restrictions

A fourth general issue regarding PSE programs that is significant in assessing the feasibility of a large-scale expansion of public job-creation programs is "targeting." Targeting refers to the setting of eligibility requirements for those who can (legally) obtain jobs through a public employment program. Targeting has shifted dramatically over the life of PSE programs since 1971, focusing more recently on persons who are unemployed 15 weeks or longer or economically disadvantaged. One of the main concerns regarding targeting is:

> In an expanded public jobs program that is targeted to certain persons among the unemployed, can persons who are ineligible for the program be effectively prevented from getting these jobs?

The current evidence is not favorable. A recent General Accounting Office study citing a Department of Labor audit states that "the rate of ineligibles for the Title VI program may be as high as 10.8 percent" (GAO, p.4). This lack of an effective system to verify eligibility of potential participants, unless remedied, could prove to be a serious constraint on the ability of a large-scale PSE proram to target the jobs created for persons most in need.

A second main concern regarding targeting is, to the extent that the PSE program is restricted to the long-term unemployed who are economically disadvantaged, the persons eligible to participate in the program will be predominantly low skill. Many badly needed public service and public works activities will require some high-skill workers and supervisors (in addition to large numbers of low-skill persons) if they are to be expanded. Thus, restricting a public jobs program to low-skill workers may render some activities listed in this report infeasible. In addition, it could limit the usefulness of the program to those who gain jobs by severely limiting the opportunities to receive proper supervision, adequate training, or the experience of working with a relatively skilled person.

Restrictions on Spending

The fifth major issue also results from the restrictive nature of some of the regulations of the current PSE program. These regulations state that 85 percent of the total funds for the program must go to wages. The implementation problem that this raises is that a wide variety of activities cannot be undertaken utilizing public job-creation funds because they either require too much money for necessary materials, supplies, and equipment costs, or demand too much administration, supervision, and training related expense to be paid fully from public jobs funds. The restrictive nature of the funding, as it now stands, could serve to limit the feasibility of the number of public service and public works activities that could be implemented under a public jobs program.

Political Opposition from Pressure Groups

A sixth major operational issue that could render the expansion of some public service or public works activities infeasible is what we call "pressure group" problems. For example, in cases where expansion of public service or public works activities can be expected to reduce the revenues of profit making enterprises, these companies, their lobbyists, and representatives will fight hard to prevent expansion of the activity. If a union perceives that its membership could be adversely affected by expanding a public service or public works activity through a public jobs program then it will fight to curtail the program. Unions often fear that people supported by a public jobs program who are being paid less than the union wage will take over some of the functions currently performed by union members and either drive them out of work or cause a lowering of union wages through the competititon. Thus, where unions are strong, they may seek to prevent local units of government from undertaking activities with a public jobs program that are in any way similar to the functions performed by union members of the area.

Transition to Unsubsidized Employment

A final operational issue of concern to those considering a large-scale expansion of public jobs programs is the ability of workers to gain unsubsidized jobs (in either the public or private sector) after they have been a participant in a public jobs program for a given period of time. Little sustainable evidence exists as to the succes (or lack of success) that current

PSE participants are having in securing unsubsidized jobs upon completion of a subsidized period of employment. One would expect that persons holding subsidized jobs which do not provide transferable skills, positive work attitudes, or knowledge of other employment oppotunities are going to have little success in finding unsubsidized employment even after holding a publicly subsidized job. However, because of the paucity of research on this issue and the lack of knowledge regarding individual local labor market future needs, little can be said regarding the public job-creation activities that will lead to high transition rates and the ones that will not. In a general sense though, a large-scale public job-creation effort must devote significant resources to transition since the inability of a public jobs program to result in the gaining of unsubsidized employment by its participants would signify the failure of the program to meet one of its most often quoted objectives.

As noted earlier, there is no basis for us to pass judgment on the current level of transition, which activities promote it, or which activties do not contribute to it. Whether this issue would become a major source of problems in administering a large-scale public jobs program is not certain, but the potential exists for it to limit severely the "success" of future jobs programs if we are to measure them by this criterion.

Linking Issues to Projects

We have presented the major implementation problems that were raised by previous research and that surfaced during our site visits and have discussed them in a general manner. Now, we attempt to link, where possible, some of these issues with some of the activities that we have suggested as viable candidates for expansion. This section attempts to show how expanding certain activities could be rendered less feasible due to expected implementation problems.

The implementation problems focused on in this section include: (1) targeting employment opportunities, (2) lack of resources for training, supervision, materials, supplies, and equipment, and (3) pressure group problems. The major activities whose expansion may be rendered less feasible due to one or more of these implementation problems include:

- Education and School Related Activities
- Energy Conservation
- Environmental Programs
- Housing and Public Housing Related Activities
- Local Government Supported Buildings and Public Works
- Social Services.

The expected problems and their linkages with specific program areas are summarized in Table 7.1 and discussed below.

TABLE 7.1

ADMINISTRATIVE AND ORGANIZATIONAL PROBLEMS BY SELECTED PROGRAM AREAS

	Targeting Employment Opportunities	Lack of Resources for Materials, Supplies, and Equipment	Lack of Resources for Training and Supervision	Pressure Group Problems
Education	X		X	
Energy Conservation		X	X	
Environmental Programs		X		
Housing Activities	X	X	X	X
Public Works	X	X	X	X
Social Services	X		X	

Education

Earlier in this report we estimated that over 1.2 million employment opportunities could be created in education related services to meet public needs. Two implementation issues discussed above may reduce the actual number of jobs that can be created in the field of education through a public jobs program. The first issue is targeting. A large percentage of the jobs will require professional skills and if future public jobs programs are restricted to those with low-skill levels then there will be a skill imbalance between the available workers and the skills demanded by the jobs created.

The lack of resources allowed for training and supervision of persons hired under public jobs programs also may serve to limit the number of additional low-skill workers that schools can abosrb. At present, schools must stretch their existing resources to meet the supervision and training needs of new and primarily low-skill employees made available to them by PSE. The ability of school districts to use even more of their own scarce resources to help create large numbers of jobs under a public jobs program is limited due to the less than rosy financial picture of school districts. Thus, two features of current employment programs--targeting and lack of resources for training and supervision--could limit the feasibility of creating large numbers of jobs in the field of education through a public jobs program.

Energy Conservation

Two issues could limit the feasibility of expanding energy conservation activities under a public jobs program. The first issue is one that also may limit the potential for job-creation in education. It is the lack of resources for training and supervision. Many of the energy conservation activities that we have suggested as viable candidates for expansion will require that persons carrying out these jobs be given both training and supervision by those knowledgeable in the field. Second, some of the energy conservation activities that we have suggested, such as weatherization of houses and buildings, will require substantial funds for materials, supplies, and equipment. These funds are not provided in current job-creation programs and, if funds are not made available for non-wage costs under an expanded public jobs program, activities such as this one and others to be discussed below will not be able to be expanded to a large scale.

Environmental Programs

This same issue--lack of funds for materials, supplies, and equipment--could limit severely the potential for creating large numbers of employment opportunities in expanding environmental and soil conservation programs. Many of these activities, including recycling of glass, paper, aluminum and other materials, soil conservation programs, and timber stand improvements, require substantial resources for equipment and cannot be financed by a program that restricts the use of its funds for non-wage costs to 15 percent of the total budget.

Housing Activities

As shown in Table 8.1, each of the four major implementation issues discussed in this section could reduce the actual number of employment opportunities that could be created in housing related activities from the large number that we estimate could be created in order to meet public needs.

Targeting a public jobs program too restrictively could keep out the skilled workers necessary to supervise and perform some of the essential work in housing rehabilitation. Second, we estimate that non-wage costs (for materials, supplies, and equipment) will be 50 percent of the total cost of expanding this program. Thus, restricting non-wage costs to 15 percent of total costs limits its feasibility. Third, if attempts are made to utilize low-skill workers to the maximum extent possible, then resources will be needed to provide training and supervision of these workers by more skilled workers or the final product could be poorly constructed. Finally, a new issue--pressure group problems--could limit the expansion of housing related efforts. On the one hand, unions could fear that non-union, lower wage publicly subsidized workers could adversely affect their wages and job security. On the other hand, private developers, home builders, and other profit making companies could fear a reduction in their businesses and profits if the government sought to expand housing rehabilitation efforts significantly. These pressure group problems are likely to be reduced through providing housing rehabilitation assistance to the poorest families who could not obtain it on the private market through profit making companies utilizing high wage union labor.

Public Works

The same four issues are relevant regarding expansion of public works projects, although the pressure group problems will not be as significant. We estimate that nearly two-thirds of the jobs created through public works activities will require skilled persons and that materials costs can be as high as 90 percent of the total cost of the project. Thus, expansion of public works activities, like expanding several housing related activities, will require a public jobs program that is flexible enough to be able to address all four major implementation issues raised here plus the issues raised earlier in this Chapter, especially short leadtime and year to year funding uncertainty.

Social Services

Generally speaking, social service activities can be expanded without large materials, supplies or equipment costs, or creating serious pressure groups problems.[1] However, expanding social services for groups such as the blind, deaf, mentally retarded, and elderly on a large scale will require using the services of a substantial number of skilled individuals currently not eligible for public job-creation programs (since they have not been unemployed or economically disadvantaged). In addition, while the use of large numbers of low-skill workers in expanding social services is desirable and feasible (from a public jobs program point of view), these workers will require training and supervision in order to carry out many of their jobs effectively. The feasibility of expanding the large number of social services that we have suggested as viable candidates for public job-creation activities will therefore depend in large part on the ability of the jobs program to provide the social service agencies with adequate numbers of skilled and supervisory personnel and the financial resources necessary to train and supervise the low-skill workers.

Conclusion

We have discussed some of the major administrative and operational issues that may limit the feasibility of a large-scale expansion of the job-creation activities suggested in this report. The severity of the impact of these issues will vary from local area to local area and among program activities.

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[1] There are exceptions. Meals on wheels programs require 50 percent of their total costs to go to non-wage items such as food, transportation, etc. and a large-scale expansion of this activity could raise pressure group problems by profit making food and restaurant companies.

Four issues could limit the potential scope and effectiveness of any activity expanded under public jobs programs. They are:

1. Ambiguous goals of public job-creation programs.
2. Red tape, lack of technical assistance, and poor interagency coordination using public job-creation funds.
3. Lack of adequate planning due to short leadtime and funding uncertainty.
4. Low transition to unsubsidized jobs.

Four other issues were discussed and examples of how each of these issues could limit the job-creation potential of specific activities were presented. These issues include:

1. Targeting.
2. Lack of funds for materials, supplies, and equipment.
3. Lack of funds for supervision and training.
4. Pressure group problems.

These final four issues and the examples that we have provided show clearly how a public jobs program must be *flexible if it is expected* to provide financial assistance to the 233 different activities that we have identified in this study. The first four issues attest to the fact that a large-scale expansion of public jobs programs must meet a basic set of preconditions in order to be well managed and effective.

These issues do not render a large-scale expansion of public job-creation programs infeasible. Rather, we have raised them in a manner that sheds light on how to rectify shortcomings of current PSE programs in order to improve them whether they are carried on at the current level or expanded greatly.

VIII. FINDINGS, CONCLUSIONS, AND POLICY RECOMMENDATIONS

The purpose of this study was to assess the feasibility of large-scale, countercyclical public job-creation. Our major concern was with the assertion that such a program was limited in its potential capacity to expand by the amount of meaningful activity it could support. In other words, we wanted to determine how much such programs could be enlarged before "make-work" activities would appear. An additional concern was with the characteristics of the activities that would be supported by such a program--their labor-intensity, the number of jobs they would provide, the skill composition of these jobs, their costs, etc. A final concern was the ranking of these activities with respect to some notion of social priority and with possible administrative and organizational issues that might pose significant barriers to the implementation of these activities.

Earlier studies produced estimates of onsite job-creation potential that ranged between 300 thousand and 5.3 million, depending on the scope of activities and jurisdictions examined and the methods used to generate estimates. Our efforts were more comprehensive than these past studies because: (1) they examined all activities at all levels of government; (2) considered both onsite and offsite job-creation; (3) compared skills required by the jobs with skills available to identify potential skill-bottlenecks; and (4) we built into our estimates possible barriers to implementation expected to arise from administrative or organizational factors.

The study identified 233 potential job-creation activities in 21 different program areas. This list of activities, together with a description of their characteristics, should provide valuable guidance to prime sponsors and other program administrators charged with the responsibility of developing job-creation activities. The largest numbers were in the following program areas: public works (37), environmental quality (31), education (27), social services (27), and criminal justice (24). From these, estimates of onsite jobs and costs could be generated for 115 activities. These 115 activities were estimated to be capable of generating around 3 million onsite jobs at a cost of $46 billion, or a cost per onsite job of slightly more than $15,000. These per-job costs ranged from as low as $8,000 for cultural activities (including museums and public libraries) to as high as $41,000 for public works. Eleven of the 21 program areas generated activities which, on average, could be considered "labor-intensive" (i.e., at least 70 percent of their total costs are labor costs), and eleven could be considered "low-skill" (i.e., at least 70 percent of the onsite job slots can be filled by unskilled laborers or service workers--the lowest-paying occupation classes). About 40 percent of all onsite jobs--or 1.2 million jobs--can be considered low-skill. Of course, a large number of additional onsite jobs could also be created by the 118 projects for which estimates could not be generated. These estimates of potential job-creation should, therefore, be considered quite conservative. It is reasonable to conclude, therefore, that *at least* 3 million onsite jobs are capable of being generated under a large-scale public job-creation program and that *more than* 1.2 million of these jobs can be filled by "low-skill" workers.

The estimated number of onsite and offsite jobs that can be generated varied according to the assumption adopted about fiscal substitution and whether the resources freed by such substitution are ultimately spent. The "optimistic" scenario assumed that all job-creation funds are ultimately spent, regardless of whether or not fiscal susbstitution occurs, and the "pessimistic" scenario assumed that none of the funds freed by fiscal substitution are spent. An estimated 3.5 million jobs are created under the pessimistic scenario and 7.4 million jobs are created under the optimistic scenario. The effect of these additional jobs is to lower the cost per job created from $15,000 (for onsite jobs) to approximately $5,800 (under the optimistic scenario) or $12,100 (under the pessimistic scenario) for both onsite and offsite jobs.

Moreover, the characteristics of jobs created offsite differed noticeably from jobs created onsite. For example, while low-skill jobs constitute over 40 percent of the onsite jobs, they represent only 15 percent of the offsite jobs. Thus, one effect of offsite job-creation is to lower the percent of jobs that can be filled by low-skill workers from over 40 percent to only 25 percent.

The actual number of low-skill jobs that are capable of being generated increases from 1.2 million to over 1.8 million (under the optimistic scenario); it falls to slightly less than 900 thousand under the pessimistic scenario.

A major conclusion to be drawn from these findings is that, because offsite employment effects of these activities is substantial and because these jobs differ in characteristics from onsite jobs, inferences about the average costs and targeting effectiveness of job-creation programs should not be drawn from onsite job-creation and cost data only.

It is reasonable to assume that, ultimately, all job-creation funds will be spent (although, in the short run, some funds freed by fiscal susbstitution might not). Thus, it can be concluded that at least 7.4 million jobs can be created at an average cost of roughly $5,800 per job and that at least 1.8 million of these jobs (approximately one-fourth of the total) can be filled by low-skill workers.

The characteristics of the supply of workers available to fill these jobs will depend on the targeting objectives of the program. Recent experience reveals a schizophrenic or inconsistent attitude toward these objectives in which emphasis has shifted back and forth between targeting on the structurally unemployed and targeting on the cyclically unemployed. Policymakers have not been able to make up their minds about whether these job-creation programs ought to be serving structural or countercyclical objectives, although the most recent changes in the program have tended to push it in the structural direction. Given this ambivalence about goals, estimates of the supply of workers available for these programs were produced using alternative aggregate demand conditions. Estimates for a structural program were generated for a "structural" program at an unemployment rate of 4.9 percent and for a "countercyclical" program at an unemployment rate of 8.5 percent. The estimates were further disaggregated into five target groups: (1) a global estimate, which included all observed (or measured) unemployed, all hidden unemployed, and all underemployed workers; (2) all measured unemployed; (3) all long-term measured unemployed; (4) all low-skill measured unemployed; and (5) low-skill, long-term measured unemployed. The estimates were converted into full-year-equivalent numbers to account for within-year turnover and to make them comparable to the estimates of the number of jobs created. Full-year equivalent supply ranged from 0.5 million to 5.7 million in the structural program, and from 1.2 million to 7.1 million in the countercyclical program, depending on the target group. Of these, low-skill full-year-equivalents numbered roughly from 0.5 million to 2.4 million in the structural program and from 1.2 million to 2.8 million in the countercyclical program.

Potential labor market bottlenecks were assessed by comparing the number of full-year-equivalent workers available for jobs to the number of jobs created by the 115 activities for which estimates were made in this study. The comparisons were made using job-creation estimates under the "optimistic" scenario for four alternative combinations of activities and five alternative target groups. Separate comparisons were made for the structural program and for the countercyclical program. The activities used to estimate job-creation were capable of generating more than enough jobs to satisfy the employment requirements of the most global target group in the countercyclical program. *A fortiori*, these activities can be expected to generate more than enough jobs for any less global target group for this program or for any target group in the structural program. The resultant bottlenecks are distributed across all occupations. *The obvious conclusion to be drawn from this finding is that any attempt to implement all of the activities that generated the job-creation estimates used in this study is likely to produce labor market imbalances that could be inflationary and that a judicious selection from among these activities would be desirable*.

When subsets of activities are examined, they are found to be suitable to particular target groups. Labor-intensive activities create an aggregate number of jobs that roughly balances the full-year-equivalent supply available in the target group of long-term unemployed workers in the countercyclical program. Labor shortages of 800,000 and 300,000 full-year equivalents appear for professional-managerial and service workers, respectively--however, these shortages can be eliminated by drawing from the supply of unemployed or underemployed workers who are not part of this target group.

Low-skill activities generate an aggregate number of jobs that roughly balances with the target group of low-skill workers in the countercyclical program. Shortages appear for professional-managerial workers (200,000), clerical and sales workers (100,000), and service workers (200,000). However, these shortages can also be eliminated by drawing from the supply of unemployed or underemployed workers who are not part of this target group.

Finally, the low-skill, labor-intensive activities generate an aggregate number of jobs that roughly balances with the job-requirements of the target group of low-skill unemployed in the structural program. Shortages appear for professional-managerial workers (100,000), laborers (100,000), and service workers (300,000). Again, these shortages can be eliminated by drawing from the supply of unemployed and underemployed workers who are not part of this target group.

From these findings one can conclude that the low-skill, labor-intensive activities used to produce estimates of job-creation in this study can serve as the foundation of a structural program targeted on the long-term or the low-skill unemployed. Additional labor-intensive activities would be required for a countercyclical program targeted on the long-term unemployed. Other activities would be required for a countercyclical program targeted on the most global group—the measured and hidden unemployed and the underemployed. These combinations of activities appear to be feasible on the basis of (1) providing meaningful work and (2) not producing labor market bottlenecks.

Priorities among program areas were established on the basis of judgments by public officials and community representatives about: (1) excess demand for public services, and (2) changes in activities that might result from an increase or a decrease in federal funding. First, areas identified as areas of excess demand by at least 20 percent of officials and representatives were isolated. Then, from among those areas, the ones selected by at least 10 percent for increases with additional federal funding, and the ones selected by a large number of officials and representatives for increases rather than for decreases were isolated. The areas that met all of these tests were defined as priority areas.

The area of environmental quality met the test for all public officials and representatives examined. The following areas met the test for all officials and representatives except elected public officials:

- housing,
- health,
- criminal justice.

These areas provide roughly one-sixth to one-fifth of the 3 million jobs created by the activities identified in this study.

It is difficult to draw policy conclusions from these findings. The officials and representatives whose judgments are reflected in these priorities were not necessarily a representative sample. Moreover, even if they were, they do not necessarily reflect a consensus about social priorities from all members of their communities. Thus, these findings must be viewed cautiously. Nevertheless, these data suggest that activities in these areas might be given priority in the selection process if all projects are not feasible.

Administrative and operational issues were examined on the basis of an extensive literature review and from information acquired during the course of our fieldwork. The following issues were identified as potential barriers to effective implementation of activities funded under a large-scale public job-creation program:

- ambiguous program goals,
- red tape,
- inadequate time for planning,
- targeting,
- inadequate resources for training, supervision, and materials,
- pressure group problems (e.g., unions, competition in private sector),
- transition requirements.

Each of these issues can render a project (or groups of projects) infeasible. Two issues--inadequate time for planning and inadequate resources for training, etc.--were singled out as amenable to policy action that would minimize the difficulties they now produce.

The former can be alleviated by more stable funding patterns. However, this improvement may be purchased at the cost of more fiscal substitution unless more effective constraints are imposed on how funds will be utilized and greater effort is made to assure that maintenance-of-efforts provisions are honored.

The latter can be alleviated by loosening the current requirement that no less than 85 percent of the funds be spent on the wage bill. While this may reduce the onsite job-creation performance of the program, it will increase the range of feasible activities and it may improve the long-range benefits accruing to program participants by providing them with better on-the-job training experience.

The major purpose of this study was to assess the feasibility of a large-scale countercyclical public job-creation program. The study identified 233 activities that could serve as the basis of such a program. The activities described in this study should provide valuable guidance to prime sponsors and other program administrators responsible for job-creation activities.

It also found that 115 of these activities--those for which job-creation estimated could be generated--were capable of producing more than enough jobs to satisfy the most ambitious goals (expressed in terms of job-requirements for target groups or eligible populations). Moreover, it found that these activities (or subsets of these activities) could be implemented on a national scale without creating serious skill bottlenecks.

Thus, it can be concluded that, from a policy perspective, such a program is feasible. Therefore, whether or not such a program should be implemented should be decided on factors other than those of make-work or skill bottlenecks.

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APPENDIX IVA

STUDIES USED TO DISTRIBUTE MATERIAL COSTS

Study	Type of Activity	Number of Job-Creation Activities Distributed
National BLS Input-Output Study		41
	Educational Services	13
	Office Supplies	28
The Stern Study		10
	Police and Prisons	3
	Social and Special Welfare Services	4
	Hospital and Health Services	3
The Vernez Study		38
	Building Construction	33
	Heavy Construction	5
Judgment		26

Source: Jones (1978).

APPENDIX IVB

SUBSTITUTION RATE BY ACTIVITY

Activity #	Rate of Substitution
0109	.25
0114	.75
0201	.75
0206	.50
0209	.25
0210	.25
0212	.25
0217	.50
0221	.75
0222	.75
0223	.50
0224	.50
0226	.75
0300	.50
0401	.25
0402	.50
0403	.25
0404	.75
0406	.50
0409	.25
0410	.25
0413	.75
0414	.50
0418	.25
0419	.25
0421	.50
0423	.25
0426	.25
0427	.50
0501	.25
0502	.25
0503	.25
0504	.25
0505	.25
0601	.25
0609	.75
0610	.75
0613	.25
0615	.75
0617	.25
0620	.25

APPENDIX IVB

SUBSTITUTION RATE BY ACTIVITY
(continued)

Activity #	Rate of Substitution
0625	.75
0626	.75
0628	.75
0629	.50
0630	.50
0631	.25
0632	.25
0701	.50
0702	.75
0704	.25
0801	.75
0802	.75
1001	.75
1004	.25
1101	.25
1102	.25
1103	.25
1104	.25
1108	.25
1109	.25
1111	.25
1201	.75
1202	.75
1203	.75
1204	.50
1205	.75
1260	.75
1207	.25
1208	.25
1209	.50
1210	.50
1211	.25
1212	.25
1213	.25
1214	.50
1215	.25
1216	.50
1217	.75
1218	.50
1219	.50
1220	.50

APPENDIX IVB

SUBSTITUTION RATE BY ACTIVITY
(continued)

Activity #	Rate of Substitution
1222	.50
1224	.75
1225	.75
1226	.75
1227	.75
1228	.75
1229	.75
1230	.75
1231	.75
1232	.50
1233	.50
1234	.25
1235	.50
1236	.25
1237	.25
1238	.50
1239	.50
1404	.75
1406	.75
1504	.25
1601	.50
1603	.25
1604	.50
1605	.25
1701	.50
1704	.50
1710	.50
1721	.25
1722	.50
1801	.75
1802	.25
1807	.75

See *supra*, Appendix IIA, for a detailed description of the activities which correspond to the above numbers.

APPENDIX IVC

ACTIVITIES BY CLUSTERS

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
	Cluster 1: Nonlabor Intensive and High-Skill Level Requirements	
0404.	Staff Support to Expand Vocational Education in Public Schools	Educational
0406.	Staff Support for School Library Operations during School Year	Educational
1710.	Staff Support for Sheltered Workshops and Vocational Rehabilitation	Office Supplies
	Cluster 1: Labor Intensive and High-Skill Level Requirements	
0201.	Staff Support for Parole and Probation Activities, Satellite (Community) Probation Offices, and Youth Offender Counseling	Office Supplies
0206.	Staff Support to Improve the Court Process Providing Clerical Help, Delivering of Subpoenae, Notification of Witnesses and Attorneys of Changes in Time, Date, or Place of Court Proceedings	Office Supplies
0210.	Staff Support for Library and Education Programs in Correctional Facilities	Educational
0217.	Staff Support for Public Defender Offices and Legal Aid Societies	Office Supplies
0221.	Staff Support for Law Enforcement Agencies, Police and Sheriff Departments Including Dispatch Operators, Commercial Security Aides, Field Aides, etc.	Security
0226.	Staff Support for Juvenile Correctional Facilities	
0401.	Staff Support for Early Detection of Reading and Learning Disabilities in Elementary Schools	Educational
0402.	Classroom and Teacher's Aides Including Bilingual Aides, Music Aides, Aides for Educationally Handicapped Classes, etc.	Educational

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
0403.	Staff Support to Expand Work-Study Activities in Public Schools	Educational
0409.	Staff Support to Expand Adult Educational Services and Training for the G.E.D. (High School Equivalency) Examinationa and Right to Read Program	Educational
0410.	Staff Support to Expand Bilingual Educational Services in Regular Public School Curriculae, Vocational Education Programs, and Adult Education Classes	Educational
0418.	Staff Support for Truancy Follow-up and Child Counseling Programs	Educational
0421.	Expand Number of Teachers to Achieve Better Teacher-Student Ratio	Educational
0423.	Staff Support for Educational Opportunities for Ex-Offenders	Educational
0426.	Increase Number of Teachers in Special Education Classes for the Handicapped	Educational
0427.	Expand Number of Teachers for Kindergarten and Nursery School	Educational
0631.	Staff Support for Citizen Participation Process for Environmental Programs Including the Resource Conservation and Recovery Act of 1976	Office Supplies
0701.	Staff Support for Expansion of Farmer's Home Administration to Improve Loan Processing	Office Supplies
0702.	Staff Support for the Bureau of Immigration and Naturalization Service to Process the Backlog of Adjudications and Implement the Amensty Program	Office Supplies
1603.	Staff Support for Boy's/Girl's Associations and Drop-in Centers	Welfare Services
1721.	Staff Support for Goodwill Industries of America, Inc.	Office Supplies
1802.	Staff Support for Crisis Intervention - Hot Line Phone Services Information and Referral Services	Office Supplies

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
	Cluster 1: Labor Intensive and Low-Skill Level Requirements	
0109.	Staff Support for Citizen Participation Processes Required under the Housing and Community Development Block Grant Program, Title XX - Social Services, etc.	Office Supplies
0209.	Staff Support for Recreation Programs in Correctional Facilities	Office Supplies
0223.	Staff Support for Property Identification Programs	Office Supplies
0224.	Staff Support for Crime Prevention Education Programs and Counseling for Businesses and Local Citizens	Office Supplies
0300.	Staff Support for Community Theatres and Theatrical Education; Children's Theatres; Community Dance Groups and Classes; Community Choir, Jazz, or Opera Groups, Lessons; Community Symphonies and Musical Training; and Museums and Neighborhood Arts Council	Office Supplies
0419.	Staff Support for After-School Tutoring Programs Using Peer Tutorers, Teacher's Aides, and the Elderly, etc.	Educational
0617.	Staff Support to Monitor Air Quality	Office Supplies
0620.	Staff Support to Survey Water Supplies	Office Supplies
0632.	Staff Support for Inventory of Solid Waste Open Dumping Areas, Record-keeping and Clerical Support for the Resource Conservation and Recovery Act of 1976	Office Supplies
0704.	Cooperative Extension Service (U.S.D.A.)	Office Supplies
0801.	Staff Support for Fire Prevention Programs such as Speeches, Displays, and Other Presentations Offered in Public Schools, to Community Groups, Employees at Their Place of Work, Home	Office Supplies
0802.	Fire Hazard Inspections in Public Buildings, Housing Units, and Businesses	Office Supplies
1001.	Staff Support for Community Health Centers and Related Services Including Community Health Workers, Environmental Health Workers, and Health Counselors	Health and Hospitals

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
1004.	Preventive Health Screening Services, Follow-up and Referrals	Health and Hospitals
1104.	Security Guards/Patrol for Public Housing Projects	
1108.	Conduct General Housing Inspections for Lead Based Paint Code Enforcement, Eligibility for Section 8 and Other Federally Supported Housing Programs	Office Supplies
1111.	Conduct Housing Abandonment Surveys	Office Supplies
1404.	Park Maintenance and Landscaping, Park Supervisors, Water Recreation Supervisors and Aides	Office Supplies
1504.	Job Search Project: Staff Support for a Project Designed to Bring Small Groups of Previously Screened Unemployed Workers to Companies and Factories Who Are Advertising for Employees. Private Companies Would Make Available a Personnel Officer to Describe the Company, Give a Tour, and Receive Job Applications. Bilingual Aides Provided by CETA Where Necessary.	Ofice Supplies
1601.	Staff Support for Big Brother/Big Sister Programs	Welfare Services
1604.	Staff Support for Day Care Services Including Day Care Centers, Nursery Schools, In-Home Day Care Services, etc.	Office Supplies
1605.	Staff Support for After-School and 24-Hour Day Care Services	Welfare Services
1701.	Staff Support for Senior Citizen Community Centers	Office Supplies
1704.	Homemaker and Long-Term Care Services for the Elderly, and Mentally or Physically Disabled; Including Escort Servcies to and from Banks, Shopping Centers, in High Crime Areas, at Night, etc., for the Elderly, Deaf, Blind, Mentally or Otherwise Physically Handicapped and Transportation to and from Medical Facilities, Shopping, Recreation Activities, Social Visits, etc.	Health and Hospitals
1801.	Staff Support for Neighborhood Community Centers	Office Supplies
1807.	Staff Support for Outreach Activities Informing Residents of the Available Resources in Their Community	Office Supplies

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
	Cluster 2: Nonlabor Intensive/High-Skill Level Requirements	
1201.	Park, County Park, etc.	Office Buildings
1202.	Police Station	Office Buildings
1203.	Fire and/or Rescue Station(s)	Office Buildings
1204.	Jail, Prison, Detention Facility	Office Buildings
1205.	Municipal Office Building, Town Hall, Courthouse	Office Buildings
1206.	Hospital, Clinic, Nursing Home, Health Center	Office Buildings
1207.	Arena, Stadium, Bleachers, Pavilion	Office Buildings
1208.	Auditorium Theater	Office Buildings
1209.	Gymnasium, Swimming Pool, Recreational Building	Office Buildings
1210.	Community Center, Social Service Center	Office Buildings
1211.	School, Learning or Training Facility	Office Buildings
1212.	Library	Office Buildings
1213.	Museum, Cultural Center, Science Center	Office Buildings
1214.	Air, Water, Rail Terminal Buildings	Office Buildings
1215.	Garage, Parking Structure	Office Buildings
1216.	Factory, Cannery, Processing Plant	Office Buildings
1217.	Shell Industrial Building, Warehouse, Market	Office Buildings
1222.	Dams, Levees, Dikes, Flood Control Structures	Large Earthfill Dams
1224.	Water System (Lines Plus Well, Reservoir, etc.)	Sewer Plants
1225.	Water Source Development (Reservoir, Well, etc.)	Sewer Plants
1226.	Water Treatment Facility (Potable)	Sewer Plants
1228.	Sewer System (Lines Plus Outfall, Pumping, etc.)	Sewer Plants
1229.	Sewage Treatment Plant, Wastewater Treatment Plant	Sewer Plants
1234.	Multiple Utility-type Project	Multiple Purpose Project

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
	Cluster 2: Nonlabor Intensive and Low-Skill Level Requirements	
0625.	Layout, Survey, Construction of Soil Conservation Practices	Highways
0626.	Site Preparation, Seeding of Eroding Roadsides	Highways
0627.	Stream Channel Clearance	Dredging
0628.	Flood Control Structure Maintenance	Flood Protection
0629.	Timber Stand Improvements on Public Land	Highways
0630.	Timber Stand Improvements on Privately Owned (Non-Corporately Held) Land	Highways
1218.	Port Facility, Harbor Development	Office Buildings
1219.	Electric Power Plant, Generating Facility	Powerhouse Construction
1220.	Dwelling Units, Houses, Apartments	Public Housing
1227.	Sewer Lines, Mains, Trunks	Sewer Lines
1230.	Street, Road, Highway (May Include Sidewalk)	Highways
1231.	Sidewalks, Curbs, Gutters	Highways
1232.	Combines Water/Sewage and Street/Road and Sidewalk	Highways
1233.	Parking Lots	Highways
	Cluster 3: Labor Intensive and Low-Skill Level Requirements	
0114.	Community Clean-up, Beautification, and Other Litter Removal Activities	Maintenance & Repair Construction
0212.	Staff Support for Health Services in Correctional Institutions	Health Services
0222.	Custodial Staff Support for Correctional Facilities	Apparel
0505.	Staff Support for Outreach (Door to Door) Counseling in Businesses, Homes, Schools, etc., on Energy Conservation	Office Supplies

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
0609.	Mosquito Control - Inspection and Spraying of Roadsides and Breeding Grounds, House and Public Buildings	Motor Vehicles
0610.	Rodent Control - Inspection and Treatment of Roadsides and Breeding Grounds, Houses, and Public Buildings	Motor Vehicles
0613.	Hazardous Materials Surveys	Motor Vehicles
0615.	Animal Control (i.e., Stray Dog Pick-up, etc.)	Motor Vehicles
1109.	Lead Based Paint Removal from Public Housing Units, Private Houses, and Public Buildings	Maintenance & Repair Construction
1406.	Reforestation of Parks and Woodlands, Other National Forest Services	Agricultural, Forestry, & Fishery
	Cluster 3: Nonlabor Intensive and Low-Skill Level Requirements	
0413.	Maintenance, Repair, and Rehabilitation of Public School Buildings and Grounds	Maintenance & Repair Construction
0501.	Home Related Construction Activities (i.e., Insulation, Winterization, and Weatherization)	Maintenance & Repair Construction
0502.	Solar Energy Research, Development, and Construction Activities	Maintenance & Repair Construction
0503.	Staff Support for Home Heating Fuel Cooperatives	Maintenance & Repair Construction
0601.	Labor Intensive Recycling Systems for Glass, Paper, Aluminum, and Other Materials	Materials Handling Machinery & Equipment
1235.	Architectural Barrier Removal in Public Libraries	Maintenance & Repair Construction
1238.	Ramping of Street Curbing in Commercial and High Density Neighborhoods	Maintenance & Repair Construction
1239.	Ramping of Street Curbing on Grounds of Educational Facilities	Maintenance & Repair Construction
1722.	Meals on Wheels Programs	Food & Kindred Products

ACTIVITY CODE		TYPE OF SERVICES DELIVERED
	Cluster 3: Labor Intensive and High-Skill Level Requirements	
0414.	School Security Guards and Hall Monitors	Apparel
0504.	Commission of Studies of Energy Waste in Public Buildings with Additional Follow-up for Continuous Monitoring of Energy Use Practices in Public Buildings	Research
	Cluster 3: Nonlabor Intensive and High-Skill Level Requirements	
1101.	Housing Rehabilitation (Extensive)	Maintenance & Repair Construction
1102.	Housing Rehabilitation (Moderate)	Maintenance & Repair Construction
1103.	Housing Rehabilitation (Minor Home Repair)	Maintenance & Repair Construction
1236.	Architectural Barrier Removal in Other Public Non-Educational Buildings	Maintenance & Repair Construction
1237.	Architectural Barrier Removal in Educational Facilities	Maintenance & Repair Construction

APPENDIX IVD

ASSUMED RATE OF SUBSTITUTION AND ONSITE AND OFFSITE EMPLOYMENT GENERATED BY 114 JOB-CREATION PROJECTS BY TYPE OF OFFSITE EMPLOYMENT AND CLUSTER FOR ALTERNATIVE ASSUMPTIONS REGARDING SUBSTITUTION (in thousands)

	Assumed Rate of Substitution	Optimistic Assumption					Pessimistic Assumption				
		Type of Employment					Type of Employment				
			Offsite					Offsite			
Type of Cluster:		Onsite	Direct and Indirect	Induced	Total	Total Onsite and Offsite	Onsite	Direct and Indirect	Induced	Total	Total Onsite and Offsite
All Clusters	.53	2,741	2,043	2,589	4,631	7,372	1,288	1,960	1,217	2,177	3,465
Labor Intensive	.54	1,856	102	1,239	1,344	3,200	854	47	570	618	1,472
Low-Skill	.57	725	53	740	794	1,519	313	23	299	322	635
C1LL	.61	584	43	692	735	1,319	228	17	270	287	515
C3LL	.40	141	10	48	59	200	85	6	29	35	120
High-Skill	.51	1,131	49	499	549	1,680	554	24	244	269	821
C1LH	.51	1,044	42	442	485	1,529	512	21	217	238	749
C3LH	.52	87	7	57	64	151	42	3	27	31	72
Nonlabor Intensive	.52	885	1,941	1,349	3,290	4,175	425	932	648	1,579	2,052
Low-Skill	.45	372	325	284	608	980	205	179	156	334	539
C2CL	.37	128	226	145	371	499	81	142	91	234	314
C3CL	.49	244	99	139	237	481	124	50	71	121	245
High-Skill	.57	513	1,616	1,065	2,682	3,195	221	695	458	1,153	1,417
C1CH	.45	100	23	77	100	200	55	13	42	55	110
C2CH	.51	270	1,500	862	2,362	2,632	132	735	422	1,157	1,290
C3CH	.75	143	93	126	220	363	36	23	32	55	91

APPENDIX IVE

ONSITE AND OFFSITE EMPLOYMENT BY OCCUPATION AND PROJECT CLUSTER

TABLE 4E.1

ALL ONSITE EMPLOYMENT BY OCCUPATION AND CLUSTER

Cluster / Occupation Group	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.00	100.0	%	#
Professional, Technical and Kindred Workers	56.7	4.4	65.6	6.0	3.6	5.5	1.3	2.0	2.4	30.5	835,583
Managers, Officials, and Proprietors	0	1.9	1.9	0	0	4.7	5.2	0	3.9	1.9	51,522
Sales Workers	0	0	0.1	0	0	0	0	0	0	0	548
Clerical and Kindred Workers	28.8	2.9	9.5	0	0	10.5	0	0.3	3.9	6.4	175,941
Craftsmen, Foremen, and Kindred Workers	8.5	4.4	0	49.4	20.3	7.1	82.8	61.2	2.5	13.4	366,407
Operatives and Kindred Workers	0	1.7	1.4	11.7	11.3	12.6	0	1.7	6.9	4.1	112,361
Laborers	0	11.6	0.2	32.2	64.6	31.8	0	34.8	67.5	16.2	443,963
Service Workers	6.4	73.1	21.3	0.6	0.2	27.9	10.8	0	12.8	27.5	754,190
Farmers	0	0	0	0	0	0	0	0	0	0	0
Total	3.6 99,651	21.3 584,300	38.1 1,044,852	9.8 269,778	4.7 127,655	8.9 243,882	3.2 87,121	5.2 142,729	5.1 140,547	100.0	2,740,515

TABLE 4E.2

ALL OFFSITE EMPLOYMENT BY OCCUPATION AND CLUSTER

Cluster / Occupation Group	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.00	100.0	%	#
Professional, Technical and Kindred Workers	10.8	11.0	12.1	9.6	8.5	12.1	10.3	11.6	11.1	10.3	474,955
Managers, Officials, and Proprietors	12.6	12.4	12.1	12.4	13.9	11.6	12.1	11.6	12.3	12.4	574,980
Sales Workers	9.6	9.1	8.9	9.8	12.0	7.8	9.0	6.3	9.4	9.5	438,582
Clerical and Kindred Workers	20.0	19.2	19.1	17.4	17.9	10.9	18.4	15.6	18.2	17.9	827,658
Craftsmen, Foremen, and Kindred Workers	11.3	10.1	10.0	12.7	11.1	20.4	9.8	19.4	10.6	12.2	566,903
Operatives and Kindred Workers	19.1	20.1	19.5	23.1	20.1	10.6	22.9	18.2	20.5	21.4	992,599
Laborers	3.7	3.5	3.4	4.3	4.2	5.0	3.4	6.2	3.7	4.2	193,470
Service Workers	11.5	12.3	12.7	9.9	11.3	10.1	11.9	9.9	12.0	10.8	499,257
Farmers	1.8	2.3	2.2	0.9	0.9	1.9	2.3	1.3	2.1	1.4	62,933
Total	2.1 99,089	15.9 735,574	10.5 484,842	51.0 2,361,528	8.0 370,886	5.1 238,259	1.4 63,875	4.7 219,534	1.3 58,743	100.0	4,631,329

TABLE 4E.3

DIRECT AND INDIRECT EMPLOYMENT BY OCCUPATION AND CLUSTER

Cluster / Occupation Group	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.00	100.0	%	#
Professional, Technical, and Kindred Workers	9.1	10.1	15.9	7.1	5.1	7.0	3.6	7.6	8.9	7.1	145,463
Managers, Officials, and Proprietors	13.5	13.1	11.8	12.9	15.3	11.8	10.3	11.7	13.4	13.0	265,941
Sales Workers	10.0	9.4	9.4	10.8	14.4	7.2	8.9	4.2	11.4	10.6	216,839
Clerical and Kindred Workers	23.3	22.2	19.8	16.4	17.3	13.2	13.0	11.1	16.8	16.4	334,824
Craftsmen, Foremen, and Kindred Workers	16.3	15.0	13.3	14.6	12.2	23.9	9.9	33.6	13.6	15.7	319,803
Operatives and Kindred Workers	15.4	16.3	14.7	25.5	20.8	21.3	43.9	17.9	22.2	23.9	488,866
Laborers	4.5	4.5	4.0	5.0	4.8	7.8	3.4	10.4	4.5	5.3	108,228
Service Workers	7.9	8.5	10.4	7.7	9.8	5.4	6.0	3.4	8.9	7.7	156,704
Farmers	0.2	0.9	0.6	0.2	0.1	2.4	1.1	0.2	0.3	0.2	6,076
Total	1.1 22,554	2.1 43.100	2.1 42,351	73.4 1,499,603	11.1 225,695	4.8 98,688	0.4 7,082	4.6 93,322	0.5 10,367	100.0	2,042,744

TABLE 4E.4

INDUCED EMPLOYMENT BY OCCUPATION AND CLUSTER

Cluster / Occupation Group	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.00	100.0	%	#
Professional, Technical, and Kindred Workers	11.3	11.1	11.7	13.9	13.7	15.8	11.2	14.6	11.6	12.7	329,492
Managers, Officials, and Proprietors	12.3	12.3	12.2	11.7	11.7	11.5	12.3	11.4	12.1	11.9	309,039
Sales Workers	9.0	9.0	8.8	8.2	8.3	8.2	9.0	7.8	8.9	8.6	221,743
Clerical and Kindred Workers	19.1	19.0	19.1	19.0	18.9	19.6	19.1	19.0	18.6	19.0	492,834
Craftsmen, Foremen, and Kindred Workers	9.8	9.8	9.6	9.4	9.4	9.3	9.8	8.9	10.0	9.6	247,100
Operatives and Kindred Workers	20.2	20.3	20.0	18.9	18.0	17.8	20.3	18.4	20.1	19.5	503,733
Laborers	3.4	3.4	3.4	3.2	3.2	2.9	3.4	3.4	3.5	3.3	85,242
Service Workers	12.6	12.5	13.0	13.7	13.7	13.4	12.6	14.7	12.7	13.2	342,553
Farmers	2.3	2.4	2.3	2.1	2.1	1.5	2.4	2.1	2.5	2.2	56,857
Total	2.9 76,536	26.8 692,475	17.1 442,492	33.3 861,925	5.6 145,191	5.4 138,590	2.2 56,793	4.9 126,212	1.9 48,376	100.0	2,588,593

APPENDIX IVF

DISTRIBUTION OF EDUCATION BY OCCUPATION

	Education (years)					
Occupation Group	8 yrs or less	9-11 yrs	12 yrs	13-15 yrs	16 yrs or more	Total
Professional, Technical, and Kindred Workers	1.8	4.5	17.9	19.7	56.0	100.0
Managers, Officials, and Proprietors	8.9	13.9	34.1	19.9	23.2	100.0
Sales Workers	9.4	21.7	38.2	19.0	11.7	100.0
Clerical and Kindred Workers	4.7	16.1	54.4	19.7	5.2	100.0
Craftsmen, Foremen, and Kindred Workers	24.0	25.8	39.3	8.8	2.1	100.0
Operative and Kindred Workers	20.5	25.2	45.8	7.4	1.2	100.0
Laborers	34.5	31.7	25.8	6.9	1.1	100.0
Service Workers	26.5	30.6	32.2	9.0	1.7	100.0
Farmers	39.8	22.1	28.1	7.0	3.0	100.0
Total	15.2 703,601	20.6 953,418	39.0 1,804,818	13.8 640,063	11.4 529,429	100.0

APPENDIX IVG

ONSITE AND OFFSITE EMPLOYMENT BY EDUCATION AND PROJECT CLUSTER

TABLE 4G.1

ALL ONSITE EMPLOYMENT BY EDUCATION AND CLUSTER

Cluster / Years of School Completed	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
										%	#
8 or less	6.1	25.2	7.8	25.6	29.6	23.7	23.2	27.1	29.3	18.2	498,773
9-11	11.3	28.5	11.7	26.4	28.8	26.2	25.4	27.4	29.0	20.9	572,767
12	31.2	32.1	25.1	34.3	30.5	34.0	38.0	34.3	29.6	29.9	819,414
13-15	18.2	9.7	17.2	8.7	7.8	10.3	9.5	8.4	8.6	12.6	345,305
16 or more	33.5	4.5	38.1	4.9	3.3	5.8	3.9	2.8	3.5	18.4	504,255
Total	3.6 99,651	21.3 584,300	38.1 1,044,852	9.8 269,778	4.7 127,655	8.9 243,882	3.2 87,121	5.2 142,729	5.1 140,547	100.0	2,740,515

TABLE 4G.2

ALL OFFSITE EMPLOYMENT BY EDUCATION AND CLUSTER

Cluster / Years of School Completed	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
										%	#
8 or less	14.83	14.99	14.84	15.26	14.95	14.72	15.26	16.23	15.07	15.1	697,941
9-11	20.36	20.34	20.18	20.77	20.72	18.63	20.59	20.89	20.39	20.6	954,980
12	39.13	38.80	38.53	39.28	39.13	32.98	39.11	38.04	38.64	39.0	1,805,755
13-15	14.22	14.19	14.10	13.73	14.08	12.29	13.80	13.33	13.94	13.8	641,439
16 or more	11.89	11.89	12.38	11.04	11.09	11.79	11.37	11.64	11.89	11.5	531,211
Total	2.1 99,089	15.9 735,374	10.5 484,842	5.0 2,361,528	8.0 320,886	5.1 238,259	1.4 63,874	4.7 219,534	1.3 58,747	100.0	4,631,329

TABLE 4G.3

DIRECT AND INDIRECT EMPLOYMENT BY EDUCATION AND CLUSTER

Cluster / Years of School Completed	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	C3LL	Total	
										%	#
8 or less	14.20	14.38	13.73	15.64	15.11	17.65	17.01	18.40	15.06	15.7	320,071
9-11	20.18	20.09	19.30	21.27	21.20	21.83	22.39	22.23	20.76	21.2	433,06
12	39.95	39.45	37.74	39.96	39.79	38.78	41.74	34.24	39.28	39.7	810,96
13-15	14.58	14.42	14.68	13.34	14.03	12.57	11.99	12.13	13.87	13.5	275,77
16 or more	11.33	11.68	14.47	9.89	9.72	9.19	7.03	9.14	11.06	9.9	202,23
Total	1.1 22,554	2.1 43,100	2.1 42,351	73.4 1,499,603	11.1 225,695	4.8 98,668	0.4 7,082	4.6 93,322	0.5 10,367	100.0	2,042,74

TABLE 4G.4

INDUCED EMPLOYMENT BY EDUCATION AND CLUSTER

Cluster / Years of School Completed	C1CH	C1LL	C1LH	C2CH	C2CL	C3CL	C3LH	C3CH	3CLL	Total	
										%	#
8 or less	16.15	14.99	14.96	14.66	14.47	14.03	15.02	14.72	15.09	14.8	383,112
9-11	20.31	20.30	20.29	19.95	19.72	19.48	20.35	19.97	20.32	20.1	520,566
12	38.73	38.68	38.65	37.97	37.66	37.84	38.79	37.94	38.55	38.4	993,502
13-15	14.03	13.98	14.06	14.19	14.09	14.48	14.03	14.22	13.98	14.1	364,992
16 or more	12.00	11.88	12.17	13.20	13.08	14.21	11.94	13.48	12.09	12.6.	326,939
Total	1.1 76,536	2.1 692,475	2.1 442,492	73.4 861,925	11.1 145,191	4.8 138,590	0.4 56,793	4.6 126,212	0.5 48,376	100.0	2,588,593

APPENDIX VIA

DEMAND FOR LABOR BY PROJECT CLUSTER AND SUPPLY OF LABOR BY TARGET GROUP AND TYPE OF PROGRAM, EACH CLASSIFIED BY OCCUPATION

TABLE 6A.1

DEMAND FOR LABOR CREATED BY PUBLIC JOB-CREATION PROJECTS BY OCCUPATION GROUP AND TYPE OF CLUSTER, ALTERNATIVE ASSUMPTIONS ABOUT IMPACT OF DISPLACEMENT

Number of Jobs (in Thousands)

Type of Cluster / Occupation Group	All Clusters		Labor-Intensive		Low-Skill		Low-Skill, Labor-Intensive,	
	Optimistic Assumption	Pessimistic Assumption	Optimistic Assumption	Pessimistic Assumption	Optimistic Assumption	Pessimistic Assumption	Optimistic Assumption	Pessimistic Assumption
Professional & Managerial	1,939	939	1,075	495	401	191	232	100
Clerical and Sales	1,444	693	501	230	427	204	251	108
Crafts	933	447	236	109	243	116	110	47
Operatives	1,105	530	320	147	346	165	180	77
Laborers	637	306	211	97	378	180	190	82
Service Workers	1,253	601	827	380	677	323	543	233
Farm Workers	63	30	31	14	26	12	18	8
Total	7,379	3,536	3,201	1,472	2,498	1,192	1,524	653

Source: Jones

TABLE 6A.2

SUPPLY OF LABOR AVAILABLE FROM SPECIFIED TARGET GROUPS BY OCCUPATION GROUP, TARGET GROUP, AND TYPE OF PUBLIC JOB-CREATION PROGRAM

Number of Jobs (in Thousands)

Target Group / Occupation Group	Structural Program					Structural and Countercyclical Program				
	Low-skill unemployed		All unemployed		Total, unemployed and underemployed	Low-skill unemployed		All unemployed		Total, unemployed and underemployed
	Long-Term	All	Long-Term	All		Long-Term	All	Long-Term	All	
Professional & Managerial	16	27	146	271	462	32	47	332	534	787
Clerical and Sales	50	103	274	546	897	128	181	573	896	1,323
Crafts	65	138	147	342	616	197	288	459	715	1,065
Operatives	155	290	293	564	1,037	428	583	907	1,140	1,673
Laborers	73	148	128	279	470	161	234	312	450	782
Service Workers	122	230	229	428	785	209	329	456	741	1,250
Farm Workers	17	37	23	53	160	36	62	56	103	219
Inexperienced	-	-	-	-	73	-		-	-	136
Total	498	973	1,140	2,483	4,500	1,191	1,724	3,095	4,579	7,135

Source: Thorpe